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Notes, chiefly Botanical, made during an excursion from Darjiling to Tonglō, a lofty mountain on the confines of Sikkim and Nepal, by J. D. HOOKER, M. D., R. W., F. R. S., &c. Honorary Member of the Asiatic Society. (Communicated by the Hon. Sir JAMES COLVILE, President As. Soc.)

May 19th, 1848.—Left Darjiling in the forenoon of this day, accompanied by my friend, C. Barnes, Esq. We took with us a small tent, about 15 Lepcha and Ghorkha coolies, together with as few servants as possible, these being bad mountaineers, and our route involving much ascent and descent. The direction is W.; the distance, in a straight line, little above 12 miles; but occupying good 3 days' march; for we have to descend from Darjiling 5000 feet to the intervening river beds, cross these and as many spurs of 1000—1500 feet, and thence ascend to a summit 10,000 feet above the sea. The route is of course wholly within the sub-Himalaya, and always through the forest region. What clear spots we saw were artificial, and large trees extend to the top of Tonglo; which is however below the lower limit of Alpine Pines in this parallel, and of the Arctic vegetation of the loftier Himalaya.

A Lepeha carries his load in similarly formed, but much ruder baskets, than those used by the Nepal races, and I observe that he uniformly used shoulder straps, with or without the belt across the forehead, which latter is most frequently wholly dispensed with.* The weight thus

* May not the use of the head-strap be a predisposing cause of goitre, by inducing congestion of the Laryngeal vessels? The Lepcha is certainly far more free of this disease than the Bhothea, or than any of the tribes of E. Nepal I have

transported to great distances is very surprising ; on an average our Lepcha loads weighed 100 to 120 lbs. On our return we had the curiosity to weigh the then sodden tent, which was 180 lbs., and had been carried for 10 hours both up and down hill in this state. To keep the contents of the basket dry, the Lepcha makes a large hood of bamboo platting, enclosing layers of leaves of *Scitamineæ* ; this fits over their heads and baskets, reaching as low as the hips, but open in front, and leaving both the upper and lower limbs free.

In point of climate Tonglo shares the excessive humidity of the rest of Sikkim, though when viewed from Darjiling it is often seen to be clear when all the northern and much nearer eastern and south-eastern mountains are wrapped in clouds. This arises from its position, and its protection from the S. E. or rainy wind. It rises as a long saddle, from that great southern spur of Kunchin-jinga, (which should bear the general name of Singalelah) and which, dividing Nepal from Sikkim throughout its whole length, extends from the perpetual snows of perhaps the loftiest mountain on the globe, to the plains of India. The direction of this ridge is of course meridional. At right angles to, and a little south of Tonglo, the Sinchul ridge of 9000 feet, meets that of Singalelah, and thus two sides of a box are formed, one of which, the meridional, encloses Sikkim to the west, whilst the other shuts it off from the plains on the south. Darjiling, placed on a spur projecting N. from Sinchul, is a ridge parallel to that of Tonglo, which bounds its western horizon. Throughout the greater part of the year the S. E. wind prevails, rising at sunrise, and its vapors are condensed at once on the forests of Sinehul ; billowy clouds rapidly succeed small patches of vapor, and rolling over to the N. side of the mount, are carried N. W.,

mixed with, and he is both more idle and less addicted to the head-strap as a porter. I have seen it to be almost universal in some villages of Bhotheas, where the head-strap alone is used in carrying in both summer and winter crops, as who amongst the salt traders, or rather those families who carry the salt from the passes to the Nipalese villages, and who very frequently have no shoulder-straps, but invariably head bands. I am far from attributing all goitre, even in the mountains to this practice, but I think it is proved, that the disease is most prevalent in the mountainous regions of both the old and new world, and that in these the practice of supporting enormous loads by the cervical muscles is frequent. It is also found in the Himalayan sheep and goats, which accompany the salt traders, and whose loads are supported in ascending, by a band passing under the throat.

over a broad intervening valley, to Darjiling. There they bank on the east side of the spurs, and this being clear of trees, the accumulation is slow,* and always first upon the rare clumps of woods. Very generally by 9 A. M. the whole eastern sky, from the top of Darjiling ridge, is a dense fog, the western exposure enjoying sunshine for an hour or two later. At 7 or 8 A. M., very small patches are seen to collect on Tonglo, which gradually dilate and coalesce, but do not shroud the mount for some hours, generally not before 11 A. M. or noon. Before that time however, masses of mist have been rolling over Darjiling ridge to the westward, and gradually filling up the valleys, so that by noon or 1 P. M. every object is in cloud.

Towards sunset it falls calm, or a light S. W. wind springs up. In the former case the mists rise, first from the S. E. mounts, and especially if the S. E. wind, exhausted of its surplus vapors, still blows. This raises the clouds first from Sinchul, and when this is not clear, Tonglo breaks through the western mists. If on the other hand a S. W. breeze sets in, or a W., or N. W., Tonglo clears first.

In descending from Darjiling the zones of vegetation are marked well at a little below 7000 feet, or between 6000 and 7000 by—(1.) The oak, chestnut and *magnolia*, the main features of 7000—10,000 feet. (2.) Immediately below 6500, the Tree-fern† appears (*Alsophila gigantea*, Wall.), a widely distributed plant, common to the Himalaya from Nepal eastward to the Malayan Peninsula, Java and Ceylon. (3) Palms, a species of *Calamus*,‡ the “Rhenoul” of the Lepchas. This, though

* I have the singularly good fortune to occupy in Mr. Hodgson’s house the most favorable spot in the station, for watching the diurnal march of atmospheric phenomena. My host’s house is placed on an eminence, 500 ft. above the main body of the Darjiling spur, and at its upper or southern extremity ;—it commands an unimpeded prospect to the N. W. and E. having the snows of Kunchin-jinga to the N. and the superb sweep of 80 miles of snow from its summit round by N. E. to E. To the S. E. Sinchul :—and to the west the Singalelah range, from Kunchin to Tonglo. The station stretches N. in full front, as a sharp ridge. I have found it difficult to make old residents of one or other side of Darjiling spur, believe, that whilst their house in the western slope is enjoying hours of sunshine the whole western side is enveloped in fogs.

† Of this I have seen but one species in the mountains, a very similar, or possibly distinct species, grows at the foot of the outer range.

‡ The fruit of all the *Calami* are eaten by the Lepchas and the stems of large species applied to various economic purposes.

not a very large species, climbs lofty trees, and extends some 40 yards through the forest ; 6500 feet is the upper limit of palms in the Sikkim Himalaya, and one species alone attains so great an elevation. Four other *Calami* range between 1000 and 6000 feet, on the outer hills, some of which are found 40 miles distant from the plains. The other Palms of Sikkim are, "Simong"—a species of *Caryota*, which I have not procured flower or fruit ; it is rare, and ascends to nearly 6000 feet. *Phœnix*,* a small stemless species, probably *P. acaulis*, Buch. (*P. humilis*, Royle ?) which grows on the driest soil in the deep valleys (Schaap of the Lepchas). *Wallichia† caryotoides*, apparently the plant described by Roxburgh,‡ and if so, having a very wide range (Assam and Chittagong). It is the "Ooh" of the Lepchas, who make no use of it.—Dr. Campbell and myself, during a recent journey in Sikkim, found that it is an admirable fodder for horses, who prefer it to any other green food to be had in these mountains. A species of *Areca* unknown to me, is the 8th and only other Palm of these mountains, but a *Cycas* (*C. pectinata*) occurs in the deepest and hottest valleys, with the India-rubber fig,—the western limits of both these interesting plants. Of *Pandanus* there is one graceful species at elevations of 1000 to 4000 feet, ("Borr," Lepcha.)

3. The third striking feature in the vegetation in descending from 7000 feet, is a wild plantain, which ascends to above 6000 feet ; ("Lukhlo," Lepcha.) This is replaced by another and rather larger species at lower elevations ; both of them ripen their austere and small fruits, which are full of seed and quite uneatable ; good specific characters are to be drawn both from the male flowers, and the size, form and color of the seeds. The commonly cultivated plantain of Sikkim is, I am always assured, an introduced stock, (nor have the wild species been ever cultivated,) it is very large, but poor in flavor and does not bear seeds.

The zones of these three conspicuous plants are very clearly defined in descending any where from Darjiling, and especially if the traveller, standing on one of the innumerable spurs which project from the ridge,

* The feathery fronds of the *Phœnix* are used as screens in hunting, no other use is made of any part of the plant except the young seeds being eaten.

† Von Martins in a forthcoming part of his superb work, retains Roxburgh's generic name of *Wallichia* for this palm.

‡ Roxb. Fl. Ind. v. 3. p. 621, (*Wrightea*).

cast his eyes up the gorges of green on either hand. Firing the forest is so easy in the drier months of the year, that a good deal of cultivation is met with on the spurs, at and below 5000 feet, the level most affected by the Lepchas, Limbos and Sikkim* Bhotheas. The mountain slopes are so steep, that these spurs, or little shelves, are the only sites for habitations between the very rare flats on the river banks, and the mountain ridges, above 6000 feet, beyond which elevation cultivation is rarely if ever carried by the natives of Sikkim. The crops are the usual ones of the plains, and the agriculture similar, with one important exception, that rice is hardly ever irrigated. This appears the more remarkable, as on crossing the Singalelah range into Nepal, in localities there as steep as those covered with rice-crops in Sikkim, irrigation is almost universally resorted to. The varieties of grain are different, but as many as 8 or 10 kinds are grown without irrigation by the Lepchas, and the produce is described as very good (80 fold). Much of this success is due to the great dampness of the climate ; were it not for this, the culture of the grain would probably be abandoned by the Lepchas, who never remain for more than three seasons on one spot.

At the bottom of the valley is a small village of Lepchas, Limbos and Murmis, the tribe aggregated in groups, on one spur, and surrounded with small fields of the usual summer and winter crops of the plains. The Lepcha house is far more roomy and comfortable than that of the others ; it is generally square, built on posts, with a stage in front of the door, and low-eaved thatch of bamboo stems, split and laid flat. The walls are of bamboo wattle-work. In all respects it resembles the Bhothea house, but these are larger, better, and the framework is of strong wooden beams, for it is not worth the Lepcha's while to render his habitation strong and durable. Both Limbus and Murmis build smaller houses, often on the ground, but more frequently raised ; the roof is of grass-thatch or occasionally of a piece of bamboo work matting.

* I apply the term Sikkim Bhotheas to the more recent immigrants from Thibet, who have settled in Sikkim, and are an industrious, well conducted people. The Bhotheas again of Bhotan, to the eastward, rarely reside, except at Darjiling, and bear the worst reputation (and most deservedly) of any of the numerous people who flock to this station. These should not be confounded with any other Bhothean tribes of Thibet, Sikkim or Nepal.

The soil at the bases of these hills is very fertile, owing to the washing down of vegetable mould from above, the rapid decomposition of the rocks and the ashes of the burnt forest. Beneath the mould is generally a stratum of red clay which uniformly covers the hills at all elevations, and to a greater or less depth, even 15 feet. This varies much in quality, apparently owing to the admixture of matter from the subjacent rocks. Of the latter some gneisses decompose with the greatest rapidity, others resist for ages the elements. A clayey soil covers even the sharpest ridges, retained in its position by the arboreous vegetation; much of it makes excellent bricks, from containing a very large percentage of alumina.*

A large bamboo ("Pao," Lepcha) is the prevailing plant near the base of these valleys; it attains a height of 40—60 ft. and the culms average in thickness the human thigh; it is unarmed, deep green, or purplish, and used for large water vessels. Besides this there are nearly a dozen kinds of bamboo known to the Lepehas, and all have been pointed out to me. Whether these are different species or no it is impossible to say, for different genera are too similar in their foliage to be thereby specifically distinguished. Three kinds usually flower, one commonly, and of these, two bear no leaf on the flowering plant, which dies after seeding. A certain patch of ground or clump of plants seem to flower at the same time, but I could not detect, nor do the Lepchas recognize any cause for this isolation of the flowering plants. Bamboos, in the general acceptation of the term (for remotely allied genera bear the same trivial English name,) occur at all elevations below 12,000 feet, forming even in the Pine-woods and above their zone in the skirts of the *Phododendron* scrub, a small and sometimes almost impervious jungle. It would take many pages to describe the numerous purposes to which the various species, even in Sikkim, are put. In an economical point of view they may be classed into those which do, and those which do not split readily. The young shoots of one or more are eaten: and the seeds of another, raw, cooked, and made into a fermented drink.

Gordonia is here the common forest tree; (*G. Wallichii*?) an erect and singularly handsome tree, much prized in all parts of the sub-

* Nearly 30 per cent. according to the analysis of my friends, J. and C. Müller, Esqs.

Himalaya, and universally adopted for ploughshares and other purposes requiring a hard wood: it is the "Sing-brang-kun" of the Lepchas, and ascends 4000 ft. on the mountains. In very dry soils it is replaced by "Sal" (*Vateria robusta*), and more rarely by the *Pinus longifolia*.

"Toon" (*Cedrela toona*) "Simalkun," Lepcha, and another species, probably *C. serrata*, Royle, accompany the *Gordonia*, as does *Engelhardtia*, which ascends to 6000 ft. and several leguminous trees, *Acacie*, *Dalbergia*, *Terminalia* and a *Sonneratia*. Oaks at this elevation occur as solitary trees, of species different from those of Darjiling. There are 3 or 4 with a corn-formed fruit at this elevation, and 3 with spinous cups enclosing the nut, which generally affect a dry clayey soil.

Phyllanthus emblica, *Grislea*, *Symplocos* and other small trees and bushes of the plains, occupy the more open spaces near the streams. *Cucurbitacea*, *Marlea* and scandent *Leguminosa* skirt the forest. *Tici* and *Cloranthus* with Ferns inhabit rocky places, and an amaranthaceous plant (Arrua?) climbs over the loftiest trees; its copious inflorescence, like hops, whitens the forest in some places. *Sterculiae*, of 2 species, are common, as is *Pæderia foetida*, which, as well as many *Cucurbitaceæ* peppers, *Gnetum*, *Porana*, a few *Convolvulaceæ* and many *Asclepioidæ*, *Hoya*, &c. climb high.

Though the temperature of the air was only 77° at noon, these valleys are close and oppressively hot: the streams small and varying in temperature, according to the exposure of their banks; that of the first we crossed was 70°.

Some low steep spurs which we crossed, were well cultivated, though the angle of the field was upwards of 25°. The crops, chiefly maize, now sprouting. The maize is occasionally hermaphrodite in Sikkim, the bisexual flowers forming a large drooping panicle and ripening small grains. This is a rare occurrence, and the specimens are highly valued by the people.

On the ridge a "Semul" tree (*Bombax*) grows, at upwards of 3000 ft.; it is a very rare tree at this elevation, or any where else within the mountains. *Mussænda* is conspicuous for its white calycine leaves snowing the tree. A *Lysimachia*, very like the *L. nemorum* of Europe, grew near its foot.

Descending to another stream, the path led through a low dense

jungle of bamboo and figs* of several species. Indeed the general prevalence of these and their allies, the nettles, is a remarkable feature in the botany of the Sikkim Himalaya, up to nearly 10,000 ft. Of figs there were here 5 species, some bearing eatable fruit of enormous size and very palateable, others with the fruit small and borne on prostrate creeping leafless branches, which spring from the root of the tree and creep along the ground. The wild Mulberry is a common small tree in these situations, with three species of nettle,† several of *Bæhmeria*,‡ *Procris*, *Trophis*, *Celtis* and *Conocephalus*. Of shrubs are *Randia*, *Gardenia*, and *Rondeletia*, *Citrus*, *Rotlera* and other *Euphorbiaceæ*, some *Sapindaceæ* and *Terebinthaceæ*. *Scitamineæ* were not above ground, grasses are rare, and indeed most monocotyledonous plants at this season. Of terrestrial *Orchideæ* there are several species, *Dendrobium* takes the place in the valleys of *Cœlagyne*, the common epiphytical genus at Darjiling.

A troublesome Dipterous insect swarms on the banks of the stream, it is very small and black, floating like a speck before the eye. The bite of this (the "Peepsa") leaves a small spot of extravasated blood under the cuticle, very irritating if not opened.

Temperature of the water (the Little Rungeet river) 69° at 4 p. m., and of the air 75°.

Crossing the Little Rungeet we ascended another steep spur from the base of Tonglo, and camped.

Night calm and clear, with a little cirrus, but no dew formed. A Thermometer sunk 2 feet in rich vegetable mould stood at 78° two hours after it was lowered, and the same after ten hours interval on the following morning. This probably indicates the mean temperature of the month at that spot, where, however, the dark color of the exposed loose soil must raise the temperature considerably.

May 20th.—Temperature at sunrise 67° ; morning bright, clear overhead, but the mountains looked threatening. Darjiling perched on a ridge 5000 ft. above us, has a singular appearance. Desceuded from the

* One species of this very tropical genus ascends almost to 9000 ft. on the outer range of Sikkim.

† Of two of these cloth is made, and of a third cordage. The tops of two are eaten, as are several species of *Procris* ?

‡ Two species yield a fibre, one the "Poa."

spur to a narrow ravine, choaked with *Calami*, Figs, and the *Wallichia*, and crossing a stream ascended the Simonboug spur of Tonglo, so called from a small village and Lama convent of that name on its summit. The cultivation is of rice, murwa (*Eleusyne*), millett, yam, brindjal, bhang, buckwheat of 2 species, fennell and cummin, &c. A white flowered Rue, *Ruta albiflora*, is sometimes cultivated, and very common; truly wild at elevations of 3 to 7000 ft.; it is commonly used for all diseases of fowls, mixed with their food.

Aquilaria, *Myrsine*, *Embelia*, *Ardisia* and *Mæsa* all occur at 3 to 6000 ft., and we passed through groves of a handsome shrubby *Tephrozia* in full purple flower. Near the top of the spur *Rubi* and *Osbeckia* appeared, the former of several species; and hence upwards the brambles are very frequent, to 12,000 ft., between which and this level upwards of 12 species occur. These flower at different seasons, one was already in fruit, bearing large-sized well-flavored yellow fruit, as big as a raspberry.

At noon, arrived at the top of the spur, and passing some chaitis,* gained the Lama's residence and temple. The latter, nothing more than a rather large wooden Bhothea house raised on a stone platform. As we stopped here on our way down I shall allude to it afterwards more particularly.

Two species of bamboo, "Payong" and "Praong" of the Lepchas, here replace the "Pao" of the foot of the hills. The former flowered abundantly, the culms, 20 ft. high, being wholly a diffuse panicle of inflorescence. The "Praong" bears a round head of flowers at the apices of the leafy branches. Wild strawberry, violet, *Lysimachia* of several species, *Geranium*, *Polygona*, *Veronica*, &c. announced our approach to the temperate zone. In the outskirts of the temple were potato crops and peach trees. The potato thrives extremely well in Sikkim, though I think the root cultivated in Purneah district, from the Darjiling stock, is superior both in size and flavor.

Peaches never ripen in Sikkim, apparently from the want of sun;

* The chait of Sikkim (borrowed from Thibet) is a square pedestal, surmounted with a hemisphere, the convex end down and terminated with a cone, crescent and disc. These are erected as tombs to Lamas, and in memory of illustrious people, and are venerated accordingly, the people always passing them from right to left, often repeating the invocation "Om mani Padmi hom."

the tree grows well at 3—7000 ft. and flowers abundantly, and its fruit makes the nearest approach to maturity (according to the elevation) from July to October. At Darjiling it follows the English season, flowers in March and fruits in September, when the scarce reddened and still hard fruit falls from the tree.

It is curious that throughout this, the temperate region, there is hardly an eatable fruit except the native walnut.* English cultivated fruits are extremely poor; the native are confined to the walnut, some poor brambles, of which the "yellow" and "ground" raspberry is the best, some insipid figs and a very austere crab-apple. The European apple will hardly ripen, pear not at all. Currants and gooseberries shew no disposition to thrive, and strawberries, which grow well, ripen a flavorless berry. Vines, figs, pomegranates, plums, apricots, &c. will not succeed even as trees.

European vegetables again grow and thrive remarkably well throughout the summer of Darjiling, and the produce is very fair to look upon, sweet and good, but inferior in flavor to the English.

Of tropical fruits cultivated below 4000 ft. the orange and banana alone are frequent, with lemons of various kinds. The season for these is however very short, that of the plaintain might with care be prolonged, but the fruit, as I have said above, is poor; oranges abound in winter, and are excellent in flavor, but neither so large or free of white pulp as those of South America, the W. Indies or W. coast of Africa. Mangoes are brought from the plains; they do not thrive in the valleys, and though I have seen the pine-apple plant I never have its fruit.

A singular and almost total absence of sun's-light in the fruiting season, and of the heat of his direct rays, is the cause of this dearth of fruits. Both the farmer and orchard gardener knows full well in England, the value of a bright sky as well as a warm autumnal atmosphere. Without this his corn does not ripen and the fruit trees blight. The winter of the plains of India, being more analogous in its distribution of moisture and heat to an European summer, such fruits as the peach, vine and even plum, the fig, strawberry, &c. may be brought to bear

* The walnut of Sikkim has the shell extremely hard, of Bhotan as remarkably thin, in both the kernel is excellent; but not worth the trouble of freeing from the shell in Sikkim. Bhotan walnuts are largely exported from that country, and are in all respects excellent.

well in March to April and May, if they are only carefully coaxed through the previous hot and damp season, which is, in respect to the functions of flowering and fruiting, their winter.

Hence it appears that, though some English fruits will turn the winter solstice of India (November to May) into summer, and then flower and fruit; neither these nor others will accept the summer of 7000 feet on the Himalaya, though its temperature so nearly approaches that of England, as a compensation for the accumulated evils of its excessive rains and fogs. Further, they are often exposed to a winter's cold no less rigorous than the average of that of London, the snow lying for a week on the ground, and the thermometer descending to 25°. It is true that in no case is the extreme of cold so great here as in England, but it is sufficient to check vegetation, and to prevent fruit trees flowering till they are fruiting in the plains. There is a great difference herein between the climate of the central, and eastern and western Himalaya, at equal elevations. There the winters are colder and more comfortless than in Sikkim. The summer warmer and less humid. The rainy season is shorter and the sun shines so much more frequently through the heavier showers, that the apple and other fruits are brought to a much better state. It is true that the rain guage shews a greater fall there, but this is no measure of the humidity of the atmosphere, or still less of the amount of the sun's direct light and heat intercepted by aqueous vapor. It takes no account of the quantity of moisture suspended in the air, nor of the depositions from fogs, which are far more fatal to the perfecting of fruits, than the heaviest brief showers.

In the valley of Nepal, Mr. Hodgson informs me, that at 4000 feet the apple, though flavorless, ripens well and is a good fruit, as are two varieties of the European fig, but these follow the seasons they do in the plains, the winters being so mild that snow is hardly ever seen, and never lies on the ground. There however the plantain and mango do not ripen, nor the orange always. It is too warm for gooseberries, currants and raspberries, and too rainy for the vine. Apricots may be produced with care, but hardly peaches.

The Indian solstices, which are marked by one season of excessive drought, and the other of excessive humidity, can never be favorable to a copious fruit market. The obstacles to the produce of good Euro-

pean fruits, either in the plains or hills is manifest, nor do the tropical flourish as in other quarters of the globe, where the seasons are not so contrasted. Hence there is not one good fruit peculiar to the country, and perhaps but one which arrives at the highest perfection ; I mean the mango. The plantains are good, so are the oranges, pine-apples, but all these are far more abundant, most of them of much better kind, and all of them enjoying a much longer season in other warm climates. Who that has walked the fruit-markets of South America, the West Indies, or Western Africa, has not been struck with the perennial profusion of all the above fruits, and many more besides, which are unknown to India.

On ascending Tonglo, we left cultivation, and the poor groves of peaches at 4—5000 ft., and this on the eastern exposure, which is a good deal the sunniest, and at the average level to which agriculture reaches in Sikkim. Both in Bhootan and in E. Nepal cultivation is carried much higher, the more flourishing salt trade, and probably easier nature of the passes, favoring the formation of fixed habitations much nearer to the perpetual snow than in Sikkim, where the enormous mass of Kunchinjinga, intrudes its snows considerably south of the main range, and forbids cultivation within upwards of fifteen miles from its summit, in any direction. The uniform clothing of the forest too allows of no pasturage.

Above Simonborg the path to Tonglo top is little frequented, and chiefly as one of the many routes between Nepal and Sikkim which cross the Singalelah spur of Kunehinjinga, at various elevations, generally less as they are remote from the Himalaya crest, and varying from 6000 to 7000 ft. As usual, the track runs along ridges wherever these are to be found, very steep, and narrow to the top ; through deep humid forests of oak, and *Magnoliaceæ*, maury *Lauri*; both *Tetranthera* and *Cinnamomum*, one species of the latter ascending to 8500 ft., and of *Tetranthera* to 9000. Chesnut and Walnut here appeared, with *Elæocarpus*, and some leguminous trees, which however did not ascend to 6000 ft. Scarlet flowers of *Vaccinium serpens* strewed about, an epiphytical species, and above these the great blossoms of a *Rhododendron* and *Magnolia* lay together on the ground. The *Rhododendron**

* A drawing and description of this are preparing for publication in England under the name of *R. Dalhousiae*.

is a beautiful epiphytical species, growing on the larger oak limbs, and bears clusters of 6—8 flowers of greater dimensions than any known species ; these are pure white and deliciously scented of lemon. This *Magnolia* forms a large tree very densely foliated, the leaves a deep shining green. Most of the flowers drop unexpanded from the tree, and have a very sweet aromatic smell ; they are as large as the human fist, the outer sepals purple, the inner pure white. Ovaria collected into an ovate, acute, very short, dense head. It may be the *Liriodendron litifera*, Wild. (Rox. 2, p. 654). The fruit differs from either *Magnolia* or *Michelia*, and I need not say equally so from *Liriodendron*. In every flower I picked up, there was either a coleopterous grub, or lamellicorn beetle, in the centre of the receptacle.

Heavy rain came on at 3 P. M. obliging us to take insufficient shelter under the trees, and finally to seek the nearest camping ground. For this purpose we ascended to a spring, called Sinasibong, at an elevation of 6000 ft. The narrowness of the ridge prevented our pitching the tent, small as it was, but the Lepchas rapidly constructed a house, and thatched it with bamboo and broad leaves of the wild plantain. A table was then raised in the middle, of 4 uprights and as many cross pieces of wood, lashed with strips of bamboo. Across this pieces of bamboo were laid, ingeniously flattened by taking lengths, crimping the cylinders all round, and then cutting it down one side, so that it opens into a flat slab, several inches across. Similar but longer and lower erections, one on each side the table, formed couch, bed or chair ; and in one short hour, half a dozen men, with only the long knife and active hands, had fitted us with a tolerably water-tight furnished house. A thick flooring of bamboo leaves keeps the feet dry, and a screen of these and other foliage all round, renders the habitation tolerably warm.

It is at a little below this elevation, 3—5000 ft., that great scandent trees of the forests, enveloping trunks of others wholly or twisting round them, strangle the greatest of these, which decaying from out their folds, leave the reticulated sheath of climbers, as one of the most remarkable vegetable phenomenon of these mountains. Such belong to several orders, and may roughly be classified in two groups, 1. those which merely twine, and by constructing certain parts of their support, produce death; 2. those which form a reticulated mass or network round the trunk, by the coalescence of their lateral branches and rootlets, &c.

These wholly envelope and often conceal the tree they enclose, whose leafy bowers then appear aloft far above those of its future destroyer. To the first of these groups belong many natural orders, of which the most prominent are *Leguminosæ* (*Bauhinia*, *Cæsalpinia*, *Dalbergia*, *Galedupa*, *Butea*, *Robinia*, *Mimosa*). Vines, *Pothos*, *Bignoniaceæ*, *Menispermaceæ*, *Malpighiacæ*, and a few other natural orders. The inosculating branched ones are almost all figs.

At night the Lepchas sit late chatting round the fire, wretchedly housed, miserably clad, and very insufficiently fed. A more thoroughly happy people it would be difficult to find any where ; they very rarely quarrel amongst themselves, and their disposition is singularly cheerful and lively. The flute is their favorite and only musical instrument ; it is of bamboo, has only 4 equi-distant holes, situated far below the mouth-hole, which again is remote from the butt end of the instrument. It is very difficult to sound, the tone low and sweet. I have often listened with real pleasure to the simple music of this rude wind instrument ; its voice is singularly æolian, as are the airs usually played, which fall by octaves ; it seems to harmonize with the solitude of their primæval forests.

A thermometer sunk 2 feet 4 inches in the deep vegetable mould and clay, fell to 62°, and stood at 61.7 on the following morning.

Except for the occasional hooting of an owl, the night was profoundly still for several hours, after dark, it being too early in the season for the Cicadas. A dense mist shrouded every thing and the rain pattered on the leaves of our hut. At midnight a tree frog broke into the stillness with his curious metallic clack, and others quickly taking up the burthen, they kept up their strange intercourse till morning. This is called the "Simook" (Lepcha), and like so many Butachians, has a voice less like that of an animal, than any organized creature I know. The cries of beasts, birds and insects are all more explicable to our senses, and we can recognize most of them as belonging to such or such an order of animalia. But the voices of many frogs are like nothing else, and allied species utter noises which betray no affinity between them. In some, as this, it is the sound of the concussion of metals, in others of the ringing of steel or brass, any thing but the natural effects of lungs, larynx and muscles.*

* A very common Tasmanian species, utters a sound that appears to ring in an underground vaulted chamber beneath the feet.

May 21st.—Early this morning we proceeded upwards, our prospects more gloomy than ever. The road, still carried up steep ridges, is very slippery, owing to the rain upon the clayey soil, and only passable from the hold afforded by interlacing roots of trees. At 8000 feet some enormous detached masses of micaceous gneiss rise abruptly from the ridge; these are covered with mosses, ferns, *Cyrtandreae* and *Begoniæ* and creeping *Urticeæ*. Such masses occur on all the sharp ridges, and at all elevations, they project awkwardly through the soil, and are strangely confused and distorted in the stratification, down even to the ultimate lamination of the mica, felspar and quartz. They are split and never in situ, generally strangely shattered, and are evidently not the mere exposed top of any continuous rock forming the nucleus of the mountain. The invariably sloping faces of these hills and spurs, never broken into precipices, and never presenting flats or table-lands, are signs of their internal composition being a shattered mass. A uniformly dipping stratified rock of any extent would, if raised at the angle of the slopes of these hills, present a precipitous face somewhere; but the ranges of 4—8000 ft., ramify and inosculate in all imaginable directions, without presenting a bold face any where near Darjiling. The road cuttings from the plains to the Sanatarium, as well as the landslips, reveal highly inclined continuous strata, all variously distorted and much dislocated, but these are only at the foot of the hills. Above 4000 ft. all appears a strangely piled mass of gneiss rocks, with no uniformity of dip. Amongst these the red clay lies deeper or shallower as the masses are so disposed as to retain it or otherwise.

These rocks are sealed by the roots of trees, and from their summit (7000 ft.) a good view of the surrounding vegetation is seen. The mass of the forest is formed of (1) oak, 3 species of which, q. *annulata*? with immense lamellated acorns, and leaves sometimes 16 inches long, is the noblest in stature and the most abundant. (2) Chestnut. (3) *Laurineæ*, of several species, beautiful forest trees, straight-holed and umbrageous above, chiefly *Tetranthera* and *Cinnamomum*. (4) *Magnoliacæ*, three species of *Michelia*. Other trees are *Pyries*, *Saurauja*, both an erect and climbing species, *Olea*, Cherry, Birch, Alder, Maple, (*Acer*), *Hydrangea*, and one species of Fig, Holly, several *Araliaceous* trees, *Sambucus* arborescent *Rhododendrons* commence here with the *R. arboreum*, which only occurs at one spot near Darjiling, (Mr.

Hodgson's grounds on Jillapahar, 7500 ft.,) *Helwingia** and brambles are the prevalent shrubs. Ferns are not fully expanded yet, and the tree ferns upper limit is passed. This is the region of pendulous mosses, lichens, and many herbaceous plants; of which latter, except *Arums*, few had yet appeared above ground.

The pendulous mosses are chiefly species of *Hypnum*, *Nerkena*, &c. the Lichens, *Borrera* and *Usnea*. Of *Arums*, a *Speciosum* particularly effects this level, with some green spotted compound leaved kinds, and the small *Remusatia (viripara)* on the rocks and trunks of trees. Neither *Pothus (Scindapsus) officinalis, decursiva*,† nor *Scandens* are found higher up the mountain; *Arum curvatum*, Roxb., and several species of *Arisæma* are very frequent. *Calla*, *Colocaria* and *Lasia* are confined to lower levels.

Peppers reach this elevation, but no higher, whilst very prevalent shrubs are *Adamia cyanea*, *Pittoporum*; *Eurya* and *Camellia* in drier places. *Hypericum japonicum*? Some species of *Vitis* ascend thus far, and several *Cucurbitaceæ*, *Zanthoxylon* and *Sapindaceæ*. Still ascending along very slippery paths, a considerable change is found in the vegetation of the following thousand feet, from 8000 to 9000. In the forest trees, by two gigantic species of *Magnolia*, replacing the *Michelias*, and just past flowering. The *Quercus annulata* is less abundant. Chesnut disappears, with several *Lauri*; other kinds of Maple are seen, and the *Rhododendron arboreum* is replaced by a much larger species, with capitula of very large white flowers and magnificent foliage, 16 inches long. *Corneæ*, *Viburnum*, and *Lonicera* are frequent, with two or three *Hydrangeas*; many *Laurinæ* and some new oaks.

Helwingia is still more abundant as a bush, with climbing and shrubby *Smilacineæ*, epiphytical and other *Vaccinia* and *Qualtheriæ*. *Stauntonia* forms a handsome climber, with beautiful pendent clusters of lilac blossoms. The *Arabaceæ* are chiefly scandent species, and

* A new species of this most remarkable genus, which I propose naming after M. Decaisne, the able describer of the natural order, which hitherto included but one species, a native of Japan. The natural order, whose place in the vegetable kingdom has been considered doubtful, I regard as next to *Araliaceæ*.

† The juice of this is used by Lepchas and Botheas for fixing the poison of *Aconitum*, and other plants, on to their arrow-heads. It is said to increase the effect of the poison.

herbaceous, as *pseudo-ginseng*. *Symplocas*, *Limonia* and *Celastrus* are common shrubs, and small trees. *Cipus eapreolata* clothes the trees up to this height. I have not observed *Cyrtandracea* or Begonias to ascend higher than this.

At 9000 ft. we arrived on a long flat spur or shelf of the mountain, covered with lofty trees, and a dense jungle of small bamboo. *Magnolias* here formed the majority of the trees, with a few oaks, (*annulata* very rare). Great *Pyri* and two other species of *Rhododendron*, both attaining the height of 30 to 40 feet, *R. barbatum*, Wall., and *R. arboreum*, Wall., var. *roseum*, D., *C. Kadsura* and scandent *Arabaeææ* and a *Saurauja* climb the loftiest trees: *Stauntonia* crawls round their base, or over lower bushes. *Limonia* is the common shrub and *Symploeos*. A beautiful orchidæous plant, with pale purple flowers (*Caelogyre Wallichii*?) grows on the trunks of all the great trees, and perhaps attains a greater elevation than any other epiphytical species, for I have seen it at 10,000 ft. A very large, broadly cucullate spathed *Arisæma*, first appears at 8000 ft. and is abundant thence to the top of the mountain, where smaller kinds also abound at 10,000 ft.

It is to be remarked that *Leguminosæ* nowhere appears in Sikkim above 6000 ft. except the *Parochetus communis*, which however I did not see on this ascent. This total absence of one of the largest and most ubiquitous natural orders, through 4000 ft. of elevation, is most remarkable, and characterizes the whole Himalayan range of Sikkim. I know of no parallel case to this any where on the globe. In the equally humid forests of South Chili and Fuegia, the order is extremely rare, but species do exist, and the whole flora of those countries is much poorer than this, in numbers of plants. Grasses also are extremely scarce, anywhere above 4000 ft. and below 10,000 ft., always excepting the ubiquitous bamboos, which by their giant dimensions may fancifully be supposed to compensate the want of many herbaceous species: or it may perhaps be stated better thus:—where the proportion of trees is very great, both in number, species and individuals, arboreous grasses replace the herbaceous species of less jungly regions.

A loathsome tic infests the small bamboo, and a more hateful insect I never encountered. The traveller cannot avoid these coming on his person (sometimes in great numbers) as he brushes through the forest. They are often as large as the little finger nail, get inside one's dress

and inserts the proboscis deeply without pain. Buried head and shoulders, and retained by a barbed lancet, it is only to be extracted by main force, which is very painful. I have devised many tortures, mechanical and chemical, to induce these disgusting intruders to withdraw the proboscis, but in vain.

Leeches* swarm at below 7000 feet, a small black species above 3000, a large yellow brown solitary one below that. They are troublesome, but cause no irritation. In August and September these absolutely swarm, and are no less troublesome to man than to the feet of poneys.

The rain continuing heavily, we rested the men by some large pools on the flat. A small *Lobelia*, *Chrysosplenium*, *Procris*, and *Callitriche*, formed a sward on the banks, amongst which some *Ranunculus* grew (*Diffusus*, Wall, and a similar species) a large and handsome *Carex*, flourished in the water.

Ranunculus, though so common a genus literally almost everywhere else, is extremely scarce in the temperate and tropical zone of the Sikkim Himalaya; *R. sceleratus*† abounds in the plains close to the foot of the hills, but between that elevation and 10,000 feet, I have nowhere seen this or another species. Here and probably elsewhere in the Himalaya, the genus is very rare in this zone, though perhaps more abundant in the Asiatic zone above.

Cruciferæ is another natural order very frequent in the temperate and mountainous regions of all the world, except the Himalaya. A variety of *Cardamine hirsuta*? is absolutely the only plant of this order, occurring wild between the plains of India and the summit of Tongló.

* I cannot but think that the extraordinary abundance of these *Annelides* in all the grazing ground of Sikkim, may cause the death of many animals. Some marked murrains have followed very wet seasons when the leeches swarm more than ever, and the disease in the cattle described to me by the Lepchas as in the stomach, in no way differs from what leeches would produce. It is a well known fact that these creatures have lived for days in the fauces, nares and stomachs of the human subject, causing dreadful sufferings, and death in the latter case. I have seen the cattle feeding where the leeches so abounded, that 50 or 60 were frequently together on my ankles.

† I never could satisfy myself that this most abundant gangetic plant was truly wild in India. The natives have no name for it; it especially swarms in fields of wheat, flax, mustard, &c. and along the borders of greater and smaller rivers, near or below cultivated spots.

Compositæ again are far from represented in the scale they are everywhere else. Though about Darjiling, where clearances have been effected, the amazing prevalence of *Gnaphalium* and *Anaphalis*, &c., give this an appearance of the usual abundance of *Compositæ*, these very species will be found elsewhere scarce in the temperate zone of Sikkim.

Labiatæ are also poorly represented, except in clearances.

As far as I can guess, this paucity of representatives of orders for which the temperature of the Sikkim Himalaya is admirably adapted, can best be attributed,—(1.) to the uniform luxuriance of the arboreous vegetation, and the absence of either precipices or naked spots of any kind. (2.) To the humid atmosphere; for some of these groups, as *Leguminosæ*, are very rare in the only temperate climates which in the respect of humidity and equability of temperature, can be compared with Sikkim, namely New Zealand and Fuegia. There, as here, *Cru-ciferæ*, *Compositæ*, *Rammeuli*, *Labiatæ*, and above all, *Leguminosæ* and grasses are very rare in the forest region.

Our ascent to the summit was by the bed of a watercourse, now a roaring torrent, for the rain was heavy and incessant. A small *Anagallis* (like *tenella*) and a scapeless *Primula*, grew by its banks, also some smaller *Carices*, and an *Androsace*. The top of the mountain is another flat ridge, with depressions and broad pools or small lakes, in which grew an *Iris*. A square platform (raised by the Surveyor General, whose party were the only Europeans who had previously to ourselves visited this mountain) and which had been cleared from jungle, only the 8 months before, was already fast getting choked with bamboo and various trees.

Upon the very top, though only 500 feet or so above the flat, the number of additional species was great, and all betokening a rapid approach to the alpine or arctic region of the Himalaya, though large forest trees still abounded. In order of prevalence the trees are *Rhododendrons* of 4 species. (1) *R. arboreum*, var. *roseum*,* which covered the ground as large bushy trees, 40 ft. high. These ramify from the ground, the lower branches being low and patent, and the apices of all loaded with the superb scarlet inflorescence. (2) *R. barbatum*, a tree of nearly the same height, but not so spreading; flowers as copious and

* Leaves rusty colored underneath, and cordate at the petioli; probably a new species.

beautiful, but foliage brighter, more luxuriant and handsome. (3) *R. Falconeri*,* MSS., in point of foliage the most superb of all the Himalayan species; trunks inclined, 30 ft. high, branching but little, bark very smooth and papery. Branches naked, except at the apices, where clusters of small white flowers are borne; the corollas are 10 cleft and the stamens numerous. Leaves 18 inches long, very thick above, deep green and wrinkled underneath, covered with a rich deep chesnut-brown tomentum. Next in abundance to *Rhododendrons* are shrubs of *Limonia*, *Symplocos* and *Hydrangea*, forming small trees, but there are still a few *Magnolias*, very large *Pyri*, of three species, and Yew,† the latter 18 ft. in circumference; besides these, *Anisodus luridus*, now in flower, *Pieris*, *Andromeda*, *Olea*, *Celastrus*, *Cerasus* and *Daphne cannabina*. A white flowered rose, *R. sericea*?‡ was very abundant, growing erect, its numerous inodorous flowers pendent, apparently as a protection from the dashing rain. *Kadsura*, *Ochna*, *Stauntonia* and *Clematis acuminata*, were the prevailing climbers. I met with a eucurbitaceous plant at this great elevation, a *Smilax* and *Asclepiadaceous* genus (*Holostenura*?). A currant was common, always growing epiphytically on trunks of large trees. Two or three species of *Berberis*, and maple, I think nearly complete the list of woody plants. Amongst the herbaceous and smaller shrubby plants, were many of great interest, as a Rhubarb, *Rheum* (*Webbianum*?) *Aconitum palmatum*§ a very pretty species, which as well as an undescribed cougeber, yields the "Bikh" poison of E. Nepal, Sikkim and Bhotan. *Thalictrum*, one species. *Anemone vitifolia*, *Fumaria*, two *Violæ. Stillaria*, *Hypericum*, *Geranium* 2 species, 2 Balsams. *Epilobium*, *Potentilla*, *Paris* (7—10,000 ft.) *Panax pseudoginseng*, and another species, *Meconopsis Nepalensis*, 2 species of *Gen-*

* I have now upwards of 20 distinct species of this superb genus from the Sikkim mountains alone.

† The red bark of the Yew is used as a dye and for staining the foreheads of the brahman Ghorkkas in Nepal.

‡ This is the only species of rose occurring in Sikkim below 10,000 ft.

§ Probably Bikh is yielded by various *Aconita*. The name of both the Sikkim Aconites is Bikh-gniong by Lepchas and Bhotheas, who do not distinguish the two species by the roots. Another, far more powerful Bikh, is yielded by a plant of the order *Compositæ*, which I have gathered abundantly at 10 and 9000 ft. and it requires care to distinguish its root from that of the Aconites; when mixed the Bhotheas could not separate them.

tiana and 2 *Crawfurdiae*, 2 *Arisaema*, *Anagallis*, *Ardrosael* and *Ajuga*, *Disporum*, and three *Comallariae*, one with verticillate leaves, whose root is another "Bikh," and considered very virulent. *Graminiæ* were very few in number, but a large *Carex* covered the ground, amongst the bamboo.

Still the absence or rarity of several very large natural families at this elevation, which have numerous representatives at and much below the same level in the Western Himalaya, indicates a certain peculiarity in Sikkim. These are the following :—*Ranunculaceæ*, *Fumariæ*, *Cruciferæ*, *Alsineæ*, *Geraniæ*, *Leguminosæ*, *Potentilla*, *Rosa*, *Epilobium*, *Crassullaceæ*, *Saxifrageæ*, *Umbelliferæ*, *Lonicera*, *Valerianæ*, *Dipsaceæ*, various genera of *Compositæ*, *Campanulaceæ*, *Lobeliaceæ*, *Gentianæ*, *Boragineæ*, *Serophularineæ*, *Primulaceæ*, *Gramineæ*.

All the above are genera of the north temperate and subarctic zones, which seek a much higher level in Sikkim than in the Western Himalaya or Bhotan. The difference in this respect being very much greater than the small disparity of latitude, will account for, or than any (if there be any) difference of mean temperature, for the snow line is certainly very little different here, from that of the N. W. Himalaya. On the other hand, certain tropical genera are more abundant in the temperate zone of the Sikkim mountains, and ascend much higher there, than in the Western Himalaya. Of this fact I have cited conspicuous examples in the palms, plantains and tree fern ascending to nearly 7000, and in the presence of many other orders at great elevations, figs, peppers, *Lauri*, &c.; and to these could be added many others, none more remarkable than *Balanophora*, of which there are several species above 4, and even 6000 ft. one ascending to 8000.

This ascent and prevalence of tropical species, is due to the uniform humidity and the equability of the climate in this temperate zone, and is perhaps the direct consequence of these conditions. An application of the same laws accounts for the extension of similar features (tropical) of vegetation so far beyond the tropical limit in the southern ocean; where various natural orders which do not cross the 30th and 40th parallel of N. Latitude, are extended to the 40th, 50th and 60th in Tasmania, New Zealand, the so-called Antarctic Islands south of that group; and to Cape Horn itself in Fuegia.

The forest region, encroaching so far upon, and in fact covering the

temperate zone of the Sikkim Himalaya, and the snow level not being proportionally higher, it follows that, cæteris paribus, the belt occupied by upland alpine and the Arctic species, is more confined, and in all probability less prolific in species than it is in the N. W. Of this the rarity of Pines (themselves indices of a severe drought in the air or soil) would appear to afford a proof; for between the level 2500, the upper limit of the *P. longifolia*, and the *Taxus*, 10,000, which also coincides with the lower limit of *Abies*, there is no coniferous tree whatever in Sikkim; except perhaps in the mountain faces immediately subtending the perpetual snow; and there they may descend 1000 ft. lower. There are only 6 species of *Coniferæ*, including *Taxus* and *Juniperus* in Sikkim, of which two are not common to the N. W. mountains, and these six are by no means abundant in individuals; I shall however soon have the honor of laying before the Society, a short sketch of the limits of these, and shall therefore suppress further details here.

We encamped amongst the *Rhododendron* trees, on a spongy soil, of black vegetable matter, so oozy that it was difficult to keep dry-shod. The rain poured in torrents all the evening and thus, the calm, and wetness of the wood prevented our enjoying a fire. Except a transient view into the Nepal, a few miles west of us, nothing was to be seen, the whole mountain being wrapped in dense masses of vapor. Gusts of wind, not felt in the forest, swept over the gnarled and naked tree tops, and though the temperature was 50° this produced cold to the feelings in walking about, and exposure to it.

Our poor Lepchas were miserably off, but always happy under four posts and a bamboo-leaf thatch, and with no covering but thin single cotton garment. They crouched on the sodden turf joking with the Hindus of our party, who, though supplied with good clothing and shelter, were doleful companions.

I made a shed for my instruments under a tree; Barnes ever active and ready, floored the tent with logs of wood, and I laid a "corduroy road" of the same to my little observatory.

During the night the rain did not abate; the tent-roof bagged and leaked in torrents, so that we had to throw pieces of wax-cloth over our shoulders as we lay in bed.

May 22nd.—There is no improvement whatever in the weather. Two of the Hindus crawled into the tent during the night, with fever and

ague.* The tent being too sodden to carry, we had no choice but to remain where we were, and there being abundance of novelty within 20 yards of the tent, there was no difficulty, with such a pursuit as Botany, in getting through the day. Observing the track of sheep we sent two Lepehas on the scents, who after being absent the whole day, returned from some miles west in Nepal, with two sheep and as many lambs. The shepherds were Goorongs of Nepal, who were grazing their flocks on a grassy mountain top, from which the woods had been cleared; probably by fire. These to the Lepehas was a great boon, but the Hindus would not touch the flesh, and several more sickening during the day, we had the tent most uncomfortably full.†

Our inability to obtain a view was extremely disheartening, the mountain commanding a superb prospect. It embraces nearly 100 miles of the snowy range, from far west in Nepal, to Kunehinjinga and its five sister-peaks, varying from 20,000 to 28,000 ft., and from which an uninterrupted succession of snowy ridges sweeps round to east. The culminating points of this rise several to 21,000, and many to upwards of 18,000 ft. Chamalari, on the Thibetan plain, rears its head above the eastern amphitheatre of snows, at a distance of 80 miles. S. E. are the sub-Himalayas of Bhootan, and all between the billowy mountain masses of Sikkim. South, the eye should have ranged over the plains of India, the courses of the Teesta, the Konki, the Cosi, and the innumerable smaller streams which debouche on the plain.

During the whole of the 22nd, from 7 A. M. to 11 P. M., the Thermometer never varied 6° 5 degrees, ranging from 47.5 in the morning to 54°, its maximum, at 1 P. M., and 50.7 at night. At 7 the following morning it was the same. A Thermometer sunk 2 ft. 6 inches in deep vegetable mould and clay, maintained for two days the constant

* It is a remarkable fact, that both the natives of the plains under many circumstances, and the Lepchas, when suffering from protracted cold and wet, take fever and ague in sharp attacks. The disease is wholly unknown amongst Europeans residing above 4000 ft., similar exposure in whom, brings on rheumatism and cold, even in constitutions predisposed to the former, by repeated attacks of fevers in other climates.

† This was a most convenient hill tent, kindly lent us by Major Cromelin of Darjiling; it goes on one man's shoulders, and accommodates two persons with a little management.

temperature of 50.7. In spite of the heavy rain and fog the dew point was always below the temperature, with which I am somewhat surprized, for more drenching weather could not well be. The mean dew point was 50.3, and consequent humidity 0.973.*

These observations, and those of the Barometer, were taken some 60 feet below the summit, to which I moved the instruments on the morning of the 28th. At a much more exposed spot, the results would have differed no doubt. A Thermometer then sunk to the same depth as that below, stood at 49.7; or one degree colder than 60 ft. lower down.

The summit of Tonglo, by my Barometrical observations, taken simultaneously with those of Calcutta, gives the height 10,078.3 ft. Col. Waugh's, by Trigonometry, 10,079.4 ft., a marvellous instance of the perfection to which these instruments are brought, and above all of the accuracy of the tables† from which the altitudes are deduced. I hope shortly to have the honor of laying before the Society some proofs of the accuracy with which elevations by the Barometer may be obtained, together with some account of the most recent tables now in use, and which are no less remarkable for their comprehensiveness than simplicity.

May 23rd.—We spent a few hours of alternate fog and sunshine on the top of the mountain, vainly hoping for the most modest view. The air, which was always foggy, was alternately cooled and heated, as it blew over the trees, or the open space we occupied, sometimes varying 5° and 6° in $\frac{1}{4}$ hour. Whenever a lull occurred the fog was sensibly heated by the sun's rays.

The number of mosses, *Hepaticæ* and *Lichens*, growing near and on the summit, is very remarkable. There were various species of Ferns, and a small *Agaricus* grew on decayed twigs; Lichens infested the naked branches of the Rose, Barberry and Cherry. The trunks of both the *Rhododendrons*, owing to their smooth papery bark, and the bamboo, are remarkably free from Cryptogamic vegetation.

Having partially dried the tent in the wind, we commenced the

* As expressed by the quotient of the tension at the temperature of the dew point divided by that of the air.

† There are Bessel's Tables, translated by Col. Sabine, and published in the — number of Taylor's Scientific Memoirs.

descent, which owing to the late torrents of rain, was most fatiguing and slippery ; it again commenced to drizzle at noon, nor was it till we had descended to 6000 feet, that we emerged from the region of clouds. Then I met with a species of *Balanophora*, pushing through the soil ; it is a new species, monoicous, the earliest flowering of any in Sikkim, and may be distinguished from its congeners by its cyathiform involucre round the middle of the pedicel.

By dark we arrived at Simonbong, having descended 5000 feet at the rate of 1000 feet an hour, and here we were kindly received by the Lama, who gave us his temple for the accommodation of the whole party. We were surprised at this, both because the Sikkim authorities had falsely represented the Lamas as very averse to Europeans, and because he might well have hesitated, before giving ingress to a promiscuous horde of some 30 people, into a sacred building, when the little valuables on the altar, &c. were quite at our disposal. He made but one request, that the Hindus should not smoke their hookahs inside.

Simonbong is one of the smallest and poorest Gumpas (or monasteries) in Sikkim,* unlike the better class, it is built of wooden beams only, and has no monuments, except the Chaits mentioned on our way up the mountain. It consists of one large room, with small sliding shutter-windows, raised on a stone foundation, and roofed with shingles of wood ; opposite the door, which is at one end, (the east,) the altar is placed, of wood, chequered with black white and red diagonally ; to the right and left are shelves with a few MS. books, wrapped in silk ; a model of Symbonath at Nepal, in wood ; a praying cylinder, and some implements for common purposes, bags of Juniper, &c. On the shelves are English wine bottles and glasses, with tufts of *Abies Webbiana*, Rhododendrons and peacocks' feathers.

On the altar seven little brass cups are ranged, full of water ; a large shell carved with the sacred lotus ; a brass jug from Lhassa, of beautiful

* There are upwards of 20 Lama establishments in Sikkim, numbering 800 monks. Many of these are of excellent masonry, Chinese in architecture, gorgeously decorated, and for so poor a country, richly endowed. During my more recent travels in Sikkim I have visited many, been an inmate in the monasteries, and met with the greatest kindness and hospitality from the good fathers. As the first European who has ever lived with the monks, this was the less to be expected. Dr. Campbell, who afterwards joined me, and whose delightful society I visited others, records the same opinion of these good-humored people.

design, and a human thigh bone, hollow and perforated through both condyles. The shelves above contained various trifles, clay ornaments and offerings, and little Hindu idols brought from the Hurdwar fair.

Facing the altar is a bench and chair, and on one side a huge tambourine, with two carved iron drum sticks. The bench was full of mysterious implements, bells handsomely carved with idols, censers with juniper ashes, the dorge which the priest holds in his hand during service, and various water vessels ; on the stool or chair was a large platter, with a brass egg-cup inserted in it.

Of these the human thigh-bone is by much the most curious ; it is very often that of a Lama, and the longer they are the more value is put upon them. As however the Sikkim Lamas are burned, these relics are generally procured from Thibet, where the corpses are said to be cut in pieces and thrown to the kites, or into the water.

The Lama was consecrated at Chungachelling, one of the oldest Sikkim convents (three centuries) and unfortunately was not an educated or intelligent fellow.

Two boys usually reside in the temple, and their beds were given up to us, which being only rough planks laid on the floor, proved clean in one sense ; but contrasted badly with the springy couch of bamboo the Lepcha makes in your tent, and which renders carrying a matress or aught but blankets superfluous.

May 24th.—We were awakened this morning by the discordant orisons of the Lama, these commenced at sunrise by the boys coming in and beating the great tambourine close to our ears for several minutes ; then blowing the conch shells, and finally the thigh-bone, each as long. Shortly the Lama entered, clad in scarlet, shorn and barefooted, with a small red silk cap. He walked along, slowly muttering and groaning his prayer to the end of the apartment, whence he took a small red bag in which were a brass bell and dorge. Sitting down he commenced matins before the chair with the brass cup, which he filled with water and placed again in the platter,—took off his beads and continued counting them or beating the bell, uttering most dismal prayers in a very deprecatory tone, of which “ Maliva oh Maliva,” was the burthen. After various disposals of the water-jugs, cups and platter, which were filled and refilled, rice added and sprinkled about,—a large bell was violently rung for some minutes, himself snapping his fingers and uttering most

unearthly sounds. Having put away those instruments, incense was brought, of charcoal with juniper sprigs. This was muffled about, and put through many evolutions, and finally, with the water, thrown out of the window, when to our great relief the morning serviee was concluded, for the noises were quite intolerable.

After breakfast the Lama came to visit us, bringing rice, a few vegetables, and a large basket of fermented Murwa ; the latter is invariably given to the traveller, either in the state of the fermented grain, or more commonly in a bamboo jug filled right up with warm water and grain ; the fluid sucked through a reed is a refreshing drink.

A species of *Ptris* at Simonbong (which is very common elsewhere in Sikkim,) attains a height of 14 feet, as great as I ever remember having seen itself or congeners in New Zealand.

Leaving Simonbong, we descended to the little Rungeet, and crossed it lower down than before, thus avoiding some troublesome spurs ; the heat of the valleys is very great, 80° at noon, and of the stream 69° ; the latter an agreeable temperature for the coolies, who plunged teeming with perspiration into the water, catching fish with their hands.

We reached Darjiling late in the evening, and again drenched with rain, our people, Hindus and Lepchas, imprudently tarried for the night in the valleys below. Owing probably as much to the great exposure they had lately gone through and the sudden transition from a mean temperature of 50° in a bracing wind, to a hot close jungly valley at 75°, no less than seven were laid up with fever and ague.

Few excursions from Darjiling can, for their length, give a better idea of the general features and rich luxuriance of the Sikkim sub-Himalaya than one to Tonglo. I was amply rewarded, and my ever cheerful and active companion, pronounced himself so too, though we both had fully expected better weather, and some, however transient or confined, a prospect. It is always interesting to roam with an aboriginal, and especially a mountain people, though their thinly inhabited valleys, over these grand mountains, and to dwell alone with them in these forests, however gloomy and forbidding. No thinking man can do so without learning much, though slender be the resources at his command for communion. A more interesting and attractive companion in this respect than the Lepcha, I never lived with ; cheerful, kind and patient with a master he is attaehed to : rude but not savage, ignorant

and yet intelligent ; with the simple resource of a plain knife, he makes his house and furnishes your's, with a speed, alacrity and ingenuity that steals away that well known long hour, when the weary pilgrim frets for his couch. In all my dealings with them they have proved scrupulously honest. Except for drunkenness and carelessness, I never had to complain of any of the merry troop, some of whom, bare-headed and bare-legged, with *absolutely* nothing but a cotton garment and long knife, followed me for 3 months (on a recent occasion, from the scorching plains to the everlasting snows;) ever foremost in the forest or bleak mountain, and ever ready to help, to carry, to encamp, collect, or cook, they cheer on the traveller by their unostentatious zeal in his service ; and are spurs to his progress, for who would not go forwards where such followers are behind.

*The Polecat of Tibet, n. s. By B. H. HODGSON, Esq.
With a Plate.*

Every addition to the Mammalogy of Tibet is of high interest from the light it is calculated to reflect upon those very subtly varying circumstances which determine parity of climate in relation to organic development and distribution ; and I have therefore much satisfaction in presenting to the Society the following description of a new species of Weasel, bearing nearly the same remarkable resemblance to the ordinary Polecat of England as do the Raven, Magpie, Chough and Nut-cracker of Tibet to those of our own country. Ere long, when the results of the recent scientific expedition to Gnári shall have been placed before the public, the mean elevation and temperature, the moisture and the soil of the Western Province of the great transnivean plateau will, it is hoped, no longer remain matters of speculation and doubt. But we possess not, nor have any prospect of soon obtaining, similar data in reference to the central province of Utsáng, or to the eastern province of Khám. Humboldt has, indeed, assigned 10,000 French feet for the



THE POLECAT OF TIBET.

elevation of Lassa, but inferentially only ; and it is difficult to advert to what we now know of the surpassing elevation of the Himáyan peaks and gháts opposite to Utsáng,* in connection with what is credibly alleged of the very trivial descent from those gháts† to the plain of Utsáng, without coming to the conclusion that the mean height of the central province of Tibet must be nearer 15,000 feet. On the other hand, the received ratio of decrement of heat with increasing elevation‡ would, on such a supposition, reduce the temperature of Utsáng to an arctic rigour inconsistent with much that is alleged of the vegetable productions of that province, and with much that is known of its wild animals, among which antelopes and large felines make a conspicuous figure.

The whole of my quadrupeds and birds of Tibet were procured in Utsáng. Amongst the latter I have just adverted to four species, than which none are more common in, and characteristic of, Britain at once and Tibet. Nearly the same thing may be said of that singular Tibetan analogue of our familiar English Polecat, which I am now about to describe, merely observing in the meanwhile that a Boreal, though not a strictly British character, is strongly impressed upon the general contents of my Tibetan Catalogue and upon the additions since made to it, as recorded in the Journal between 1843 and 1848.

Felidæ.	Gray.	Carnivora.	Waterh.
Mustelina.		Mustelidæ.	
Putorius.		Mustela.	
Putorius Larvatus.		n. s.	
Mustela Larvata.			

* Peak of Kángcháng 28,176. Ghát of Wallúngchúng 16,642. Ghát of Kánglá-chéma 15,746, the former determined by Col. Waugh, the latter by Dr. Hooker. Peak of Dhavalagiri 27,000, (Herbert.) Of Chumalári, 24,000, (Waugh.) To all which add Deodhúnga, a peak which (as well as Dhavalagiri) is believed to rival Kángcháng.

† Journal, No. 197, pp. 495 and 499, and 499, and Turner's Tibet, at entrance into Tibet.

‡ Herbert's Report on Darjiling, p. 3.

Black-faced Polecat of Tibet.

Tail one-third of the entire length. Soles clad. Fur long. Above and laterally, sordid fulvous, deeply shaded on the back with black. Below, from throat backwards with the whole limbs and tail, black. Head pale with a dark mask over the face. Snout to vent 14 inches. Head less 3. Tail only 6. Tail with hair, 7. Palma $1\frac{3}{4}$. Planta $2\frac{3}{4}$.

Habitat, the plain of central Tibet.

My specimen of this interesting animal was obtained in the district of U', on the south of the Sánpú, and was brought to me this spring along with a second specimen of the Tibetan Badger (*Taxidea Leucurus*.) The skin was in good condition, and had the limbs and scull complete. It is seemingly a male, and certainly, a mature animal. The length from snout to vent is 14 inches and the tail is 7 more, so that *Toufæus* only of Tibet, and *Flavigula* of the Himálaya, can compare with it in size. The copious pelage more resembles that of the Yellow-neck of these mountains than that of the Sable-like Tibetan species. The fur is of two kinds, or hair and wool, both abundant, especially the wool ; and the hair is as much longer than the wool as it is less thick. The structure of the animal is typical. The face short and bluff, the head long and depressed ovoid, the neck of medial length, and as thick as the head, the body very long, the tail longish and cylindrico-tapered ; the ears, as usual, remote, truncately rounded and fissured behind ; the limbs short and strong, the fore digits being rather the larger, and the hind limbs more plainly the longer, of the two. The soles of the feet, fore and aft, are completely furred, save only the digital balls and a very small carpal one ; and this would seem to be the case with most of the mustelines, our *Cáthia* and the Javanese *nudipes* appearing to be quite exceptional in regard to the nakedness of the soles of their feet. The digits of the Tibetan Polecat are andromorphously gradated upon the whole ; but the two central fingers are more nearly equal than in the human hand, and the inner digit or thumb is small and remote, as usual with the congeners of this species. The nails, by their length and acuteness, indicate secursorial habits more proper to the Martens than to the Weasels, strictly so called, though the number and character of the molar teeth leave no doubt that our animal belongs to the latter division. The ample pelage has the hairy piles $2\frac{1}{4}$ to $2\frac{3}{4}$ inches long upon

the body. Upon the tail they are shorter, and tend to a point at its extremity, where however they do not much surpass the true tail, less so than in the English Polecat. Upon the head and limbs the hair is short, harsh and void of woolly substance. Elsewhere the hair is long, fine, straight, elastic, glossy, but much scantier than the very thick, soft woolly piles below it. The colour of the animal is a sordid fulvous, deeply shaded with black. The limbs and tail are wholly black, and so is the whole under surface of the body, save a narrow band proceeding from the fulvous flanks round the centre of the belly. A black mask covers the face, as far as the eyes, inclusive, and the nostrils exclusive. And this dark mask is rendered more conspicuous by being completely surrounded by the pale fulvous hue, which prevails over the lips, chin, cheeks, ears and crown of the head. The dimensions of the animal and of its scull are given in detail below. But I may here add in reference to the scull that it has greater height and greater arcuation along the culminal line than in most other true weasels, the English Polecat perhaps included. The teeth are $\frac{6}{6}$. $\frac{1\cdot 7}{1\cdot 1}$. $\frac{4\cdot 4}{5\cdot 5}$. The incisors above are disposed in line; but below, the intermediate teeth stand interiorly to the rest. The canines are large and somewhat curved, especially the lower ones, which however have no heel at their base. The first molar above is simple, conic and small. The next also conic, is larger with a quasi heel before and behind the cone. The third or carnassial tooth has two cutting, compressed lobes and a small internal heel placed anteally. The 4th or tubercular molar of this jaw, is transversely set, parallelogramic in form, and shows two blunt and rugged conic processes centrally divided by a transverse dip. In the lower jaw the three first molars are conic and uncompressed with more or less of heel before and behind the central lobe of their crowns. The 4th or true carnassier is, in this jaw, very trenchant, and much compressed, with three lobes, of which the hindmost is the least. This tooth has no trace of an internal heel, but its postea lobe assimilates somewhat with the tubercular of this jaw, which is a small round flat-topped tooth fitted for crushing only. The excellent drawings appended to the above description will, I hope, complete whatever more is needful to an accurate appreciation of the species.

Dimensions of the Animal.

Snout to vent,	1	2	0
Head, less,	0	3	0
Tail and hair,	0	7	0
Tail only,	0	6	0
Palma, with nails,.....	0	1	$\frac{3}{4}$
Planta, with nails,.....	0	2	$\frac{3}{8}$

Dimensions of the scull.

Length,	0	2	$\frac{5}{8}$
Height,	0	1	$\frac{3}{8}$
Width between zyg. arches,	0	1	$\frac{5}{8}$
Width between bases of parietes,	0	1	$\frac{2}{8}$
Length of upper jaw, symp., intermax to hind edge of last molar,	0	1	0
Length of lower jaw to last molar,	0	1	$\frac{1}{16}$

P. S.—The following enumeration of the Mustelidæ of Tibet and the Himálaya may be serviceable :—

1. *Martes Toufous.*
2. *Martes Flavigula.*
3. *Mustela Erminia.*
4. *Mustela Canigula.* Hodgsonii of Gray.
5. *Mustela subhemáchala.* Humeralis of Blyth.
6. *Mustela Cáthia* vel auriventer.
7. *Puttorius larvatus.*

1, 3 and 7 are confined to Tibet. The rest are Cisnivean, but belong in general, exclusively to the northern region of these mountains; 5 and 6 however are also found in the central region, and 2 is almost confined to that region. None are found in the southern region.

On the Aborigines of Nor-Eastern India. By B. H. HODGSON, Esq.

Pursuant to my plan of furnishing to the readers of the Journal a glance at the Ethnic affinities of the Aborigines of India, from the snows to Cape Comorin, I have now the honor to submit a comparative vocabulary, uniform with its precursors, of the Dhimál, Bódó and Gáró tongues, preceded by the written and spoken Tibetan, for a reason that will presently appear.

I regret that I could not on a recent occasion, nor can now, give the Chépáng vocables on this model. But it is many years since I have had access to that secluded people, and I cannot now calculate on having it again.

As I have already, in a separate work, given the Dhimál and Bódó languages upon a scale much ampler than the present one, and as I have, moreover, in that work demurred to the sufficiency of summary vocabularies, it may be asked why I repeat, myself, on the present occasion, and in the very manner I have myself objected to? My answer to this question is ready, and I hope will prove satisfactory. Three years have now elapsed since I published the work alluded to, and in that time I have had ample opportunity to observe the general indisposition to enter the field of Indian Ethnology, bent upon serious labour like the author of that work. Now, general co-operation is the one thing needful in this case: and, since I feel certain that there is no want of mental vigour in this land, I am led to ascribe the slackness I have experienced in obtaining co-operators according to the suggested model, to the novelty of the subject, whence it happens that few persons can perceive the extensive bearings and high interest of that subject.

By the present series of summary vocabularies I hope to make these points apparent, when I confidently anticipate that many able men who could not be won to give their time and attention to the elucidation of the barbarous jargon of this or that insulated and petty tribe of aborigines, will yet be stimulated to efficient exertion upon being made aware that the question, in fact, relates to the fate and fortunes, the migrations and improvement or deterioration, of the largest family of human kind. No question of ethnology is insulated. It is quite the contrary, and that by its very nature. So that wherever we begin,

even with the humblest tribe, we must soon find that we are dealing with the history, and with a material portion of the history, of some great mass of the human race. Thus, the latest investigators of the general subject of human affinities include in the great Mongolian family, not merely the high Asian Nomades, or the Túrks, the Mongols and the Tangús, but also (with daily increasing, though not yet conclusive, evidence) the Tibetans, the Chinese, the Indo-Chinese, and the Tamúlians. The Tamúlians include the whole of the Aborigines of India, whether civilized or uncivilized, from Cape Comorin to the snows ; except the inhabitants of the great mountainous belt confining the plains of India towards Tibet, China and Ava. These last are, in the Nor-West, derived from the Tibetan stock ; and in the South-East, from the Indo-Chinese stock ; the 92° of East longitude, or the Dhansri river of Assam, apparently forming the dividing line of the two races, which are each vastly numerous and strikingly diversified, yet essentially one, just as are the no less numerous and varied races of the single Tamúlian stock. Thus, we cannot take up the investigation of a narrow and barren topic like that of the Kúkí, the Chépáng, or the Góng tribe without presently finding ourselves engaged in unravelling some, it may be, dark and intricate, but truly important, chapter of the history of one of those large masses of human kind, the Indo-Chinese the Tibetans, or the Tamúlians. Nor can one prosecute this investigation far without perceiving that our subject has yet ampler relations, connecting itself by indissoluble yet varied links with those tremendous warriors who planted their standards on the walls of Pekin and Dehli, of Vienna and Moscow. Much of their fate and fortunes belongs to history, but much more to pre-historic times, when vast bodies of these so called Mongols poured themselves upon India, from the North and from the East, both before, and subsequent to, the great immigration of the Arian Hindús. Have you no curiosity to learn what may be learnt anent these important, and for us British denizens of India, domestic, events ? Or do you doubt the validity of any available media of proof ? If the latter, as is probable, be the ground of your objection to such inquiries, I would say, in the first place, look steadfastly at any man of an aboriginal race (an ubiquitarian Dhánger for instance) and say if a Mongol origin is not palpably inscribed on his face ? Or, again, take a score of words of his language and compare them with their equi-

valents in Hindí, Urdú, or any other Prakrit, and say if you are not sensible of being in a foreign realm of speech? And what can that realm be but the North and Nor-East, the Nor-West being no way available to your purpose? In the second place I would observe that every medium of proof which has been employed to demonstrate the unity of the Iranian family is available to demonstrate the unity of the Turanian; whilst, with regard to *prima facia* improbabilities, much greater ones once encompassed the now admitted fact that Hindús, Persians, Germans, English, Irish, Russians, are members of one family, viz. the Iranian, than can attend any similarly perfect demonstration, that Tamilians, Tibetans, Indo-Chinese, Chinese, Tangús, Mongols and Túrks are so many branches of another single family, viz. the Turánian. Nor are these questions of interest only to the speculative philosopher. They are, on the contrary, of vital importance to the Statesman who may be led into the most serious practical errors for want of such lights as Ethnology affords. I will give a striking and recent instance. The Chief Secretary of the Government, who is likewise one of the most able and accomplished men in India, in speaking of the educational improveability of the Hindús, has formally alleged the *impossibility* of making them worthy and vigorous men and citizens by reason of their race,* when it is really as certain as that 2 and 2 make 4, that the race of the Hindús is identical with Mr. Elliot's own! Glotology and Anatomy combine to place this great truth (and in every educational view it is pre-eminently such for all those who are now seeking to make this splendid country capable of adequate British, and eventually in the fullness of time of self-government) upon an unshakeable foundation. Would that the science of Law, national and international, stood upon an equally stable basis of numerous, largely and irrefragably inducted facts.

Having said so much by way of encouragement, upon the extensive bearings and high importance of Indian Ethnology, I will now add a few words by way of caution. Mr. Robinson, in a recent paper upon sundry of the border tribes of Assam,† has not scrupled confidently to

* Preface to the Moslem Historians of India. I cordially assent nevertheless to the justice of Mr. Elliot's strictures. But I find the cause of the actual evil elsewhere.

† *Journal*, No. 201, for March 1849.

assert the affinity of these tribes (the Bodo and Gáró amongst others) with the people of Tibet. This may, or may not, be so. But I apprehend that this alleged affinity demands larger and more careful investigation than Mr. Robinson has yet had leisure to apply to it, and that in thus deciding upon a most interesting and difficult point, he has adduced maxims which are not very tenable. In the first place, he has wholly neglected the physical and psychical evidence which are, each of them, as important as the glottological towards the just decision of a question of ethnic affinity. In the next place, whilst adducing a copious vocabulary which makes against, and a curt survey of the mechanism of language which (we will allow) makes for, his assertion, he proceeds to lay down the doctrine that the former medium of proof is worthy of very little, and the latter medium of proof (thus imperfectly used and applied) is worthy of very much, reliance. In the third place, whilst insisting upon the indispensableness of a written and fixed standard of speech, he has neglected the excellent standard that was available for the Tibetan tongue, and has proceeded to rest upon two spoken standards, termed by him Bhotia and Chángló, but neither of which agrees with the written or spoken language of Lassa and Digarchi. In the fourth place, he speaks of Bhót alias Tibet, and Bhútán alias Lhó, as the same country ; and also gives his unknown Changlo a position within the known limits of Bhútán,* without the slightest reference to the latter well-known country ; besides, speaking of the cis-Himálayans and sub-Himálayans (p. 203) as separate races !

These remarks are by no means captiously made. But some sifting of the evidence adduced is surely indispensable when a question of delicacy and difficulty is (I must think) prejudged upon such grounds.

Mr. Robinson is possibly not aware how much of the mechanism of the whole of the Turanian group of languages is common to every one language of that group, nor that the Tamulian and Tibetan languages are held to be integral parts of that group. Yet such are apparently the facts,† whence it must surely result that a cursory and exclusive view of the organization of one of these languages, such as Mr. Robinson gives and rests on, cannot be adequate to settle the Tibetan affinities of the Bódós and Gárós (interalia), since the points of lingual

* Viz. 92½ East longitude.—*Pemberton's Report.*

† Prichard, Vol. IV. p.—, and Bunsen's Report.

agreement cited may be neutral quantities, that is, characteristics common (say) to the Tamulian and Tibetan tongues, or to the Chinese and Tibetan : and certainly some of them are so far from being diagnostically, that is, exclusively, Tibetan, that they belong to Hindi, Urdú and even to English ! We have yet much to learn touching the essentials of the structure of the Indo-Chinese tongues, the Chinese and the Tibetan ; and until a philosophical analysis shall have been made of these languages it will be very hazardous to rest upon a cursory view of the supposed distinctive (structural) characters of Mr. Robinson's exclusive standard, or the Tibetan ; in regard to the structure of which tongue, moreover, he has scarcely more fully availed himself of De Cörös' grammar than he has in his vocabulary of De Cörös' dictionary. Under these circumstances I am disposed to place at least as much reliance upon Mr. Robinson's copious list of vocables* as I can do upon his incomplete analysis of structure ; and with regard to Mr. R.'s disparagement of the words of any unwritten and uncultivated tongue as evidence of ethnic affinity, I must say there seems to me a good deal of exaggeration.†

Whoever shall take an adequate number, not more than Mr. Robinson's, of well selected words, and shall take them with such care as to be able to reach the roots of the words and to cast off those servile particles, whether prefixes or postfixes, among which deviation is ever most rife, may confidently rely upon his vocabulary for much sound information respecting ethnic affinities, supposing of course that he has a good

* This list seems to gainsay Mr. R.'s theory, for if the Bódós (for example) were of Tibetan origin, it is hardly credible that their ordinary vocables should not more plainly reveal the fact, seeing that they have never been out of actual contact with races of the same descent as that ascribed to them. The suh-Himálayan dialects differ from the trans-Himálayan standard : but identity is here shown in the roots as well as in the mode of agglutinating the servile particles ; not to mention that the snows form such a barrier in this case as exists not in regard to the Bódó intercourse with tribes of Tibetan origin.

The same general result follows from a careful examination of the vocabularies now forwarded. Apparently the Tibetan, like the Hindi, words, are adopted ones.

† Mr. Kemble has lately made most important use of the Saxon of the Hep-tarchy, of its words, and words only, Saxons in England. A yet higher and strictly ethnological use has been made of the vocables of the old Iherian tongue, by the younger Humholdt, who was yet reduced to glean these vocables from maps ! What would not Bunsen give for 100 plain words of the old Egyptian tongue, as spoken.

standard and makes the proper use of it. Of course, I reject, with Mr. Robinson, as neutral quantities, all adopted, imitative and interjectional words. But when I find Mr. R. insisting upon "casual" resemblances as a class of words equally worthless with the three above enumerated, I desire to know what this chance means; for, one of the highest of living authorities on Ethnology and Glottology, and one too who insists almost too much upon the mechanism of language,* declares that "the chance is less than one in a million for the same combination of sounds signifying the same precise object."† With these cautionary remarks, which are given in a spirit of perfect courtesy towards Mr. R. I now conclude, any further observations being unnecessary to explain my purpose in appending the written and spoken Tibetan, the former from De Cörös; the latter, from a native of Lassa, to my present series of vocables.

Comparative Vocabulary of the Tibiten, Dhimál, Bódó and Gáro tongues.

English.	Tibeten.		Dhimál	Bódó.	Gáro.
	Written.	Spoken.			
Air	rSúngma	Shákpá	Birima Bhirma	Bár H	Lampár
Ant	Grogma	Thómá	Nhá múi	Hásá brai	Góngá, Sámbúr
Arrow	mDáh	Da	Khér	Balá	Phéé
Bird	Byú	Chyá	Jihá	Dou-chen	Tou-chap
Blood	Khráng	Thák	Hiki	Thóí	Chí
Boat	Grú	Koá, Syén	Náwár II	Nou H	Rúng
Bone	Rúspa	Rúkó.	Hái á H	Bégéng	Kéréng
Buffalo	Mahi. s.	Máhé	Diá	Moisho	Moishi
Cat	Byila	Simi	Mén khou	Mouji	Myou
Cow	Bá	Phá chúk	Piá	Mash-hú-jo	Máshú
Crow	Kháta	Ablak	Kawá	Dou-khá	Koura
Day	Nyinmo	Nyi mo	Nyi tima T	Shyán	Rasán, Sán
Dog	Khyi	Uybó	Khiá T	Choi má	Kai T
Ear	Sá	Amchó	Nhá tóng	Khoma	Máchór
Earth	rNá	Sá	Bhónöi	Há	Há
Egg	sGónga	Gong ná	Túi	Dou-döi, <i>fowl's water</i>	Tou-chí, <i>(fowl's blood)</i>
Elephant	gLángchén	Lámboché	Nária	Moï gédét	Nápló
Eye	Mig	Mik	Mí T	Mogon	Makar
Father	Phá	Pálá	Ábá	Bípha	Ábá
Fire	Má	Mé	Mé T	Wat	Ver, Wal
Fish	Nyá	Gná	Haiyá	Ná T	Ná T
Flower	Métog	Méntok	Lhép	Bíbar	Parr
Foot	rKángpá	Kángó	Khókoi	Yáphá	Chapláp

* See Bopp's remarks on the structural diagnostics of Sanscrit and Arabic
—Comp. Gram.

† Bunsen's Report to the Brit. Assoc.

English.	Tibetan.		Dhimál.	Bódó.	Gáro.
	Written.	Spoken.			
Goat	Rá	Rá	E'échá	Búrmá	Púrún
Hair	sKrá, sPú	Tá. Krá	Müi tú	Khanai, Kho-mon	Kaman, Houru
Hand	Lág pá	Lángó	Khúr	Akhái	Chákréng
Head	mGó	Gó	Púring	Khóró	Dakam
Hog	Phag	Phak	Páyá	Yóma	Vak
Horn	Rá	Rajo	Dáng	Góng	Korong
Horse	rTá	Tá	Onhyá	Kórai H	Ghora H
House	Khyim	Náng	Chá	Noö	Nagou
Iron	lChags	Chhyá	Chír	Chúrr	Shúrr
Leaf	Lómá	Hyómá	Lhává	Lai	Léchak
Light	Hod	Hwé. Eu	Sáuéká	Chúráng, Shráng	Klángkláng
Man	Mi	Mi	Wával, Diáng	Hiwá Mánshi*	Míva
Monkey	sPrébú	Tyú	Nhóyá	Mókhara	Kouwé
Moon	zLáva	Dáwá	Táli	Nókhábir	Ráng rét
Mother	Ama	Ámá	Amá	B má	Ama
Mountain	Rí	Rí	Rá T	Hójó	Há chúr
Mouth	Khá	Khá	Núi	Khouga	Hótong
Moschito	Súnbú,	Syé dongma	Jáhá	Thámphoí	Sotsá
Name	Ming	Ming	Ming T	Múng T	Múng T
Night	mTshanmo	Chénmó	Nhishing	Hór	Phar
Oil	hBrúmár	Num	Chúítí	Thou	Tél H
Plantain	Caret	Grálá	Yúmphí	Thálit	Laktaí
River	gTsáng po	Cháng pó	Chí	Dóí	Chí
Road	Lam	Lani	Dámá T	Lámá T	Lam T
Salt	Tshá	Chhá	Désé	Shyung káré,	Syang
Skin	Pág spa	Pág-pa	Dhálé	Bígúr	Holop
Sky	Nam kháh	Nam	Sórgi H	Nó khoráng	Sórg H
Snake	sBrúl	Deu	Púnhá	Jíbou	Dúpú
Star	sKarma	Karma	Phúró	Háhot khi	Laitan
Stone	rDó	Dó	Unthúr	Onthai	Lóng
Sun	Nyímá	Nyí má	Béíá H	Shán	Sán, Rasán
Tiger	sTag	Tak	Khúnjá	Mochá	Matsá
Tooth	Só	Só	Sí tong	Hathai	Phá tóng
Tree	IJonshing	Shin dong	Shing T	Bong-phág	Pan
Village	Yúl tsho	Thóng	Dérá H	Phárá H	Sóng
Water	Chhú	Chhú	Chí T	Dóí	Chí-ká T
Yam	Dóvá	Thómá	Ling	Thá	Hán
I	Ná	Gnyá	Ká	Áng	Áng
Thou	Khyod	Khé	Ná	Náng	Náng
He, she, it	Kho	Khú	Wá	Bí	U'
We	Nachag	Gnánjo	Kyel	Jong	Ning
Ye	Khyodchag.	Khenjo	Nyel	Nang chúr	Nanók
They	Knochag	Khonjo	Úbal	Bí chúr	O'nók, Wonók
Mine	Nahi. Nayi	Gná yi	Káng	Angni	Angni
Thine	Khoyod kyi	Khé yi	Náng	Nangni	Nangni
His, &c.	Khoyi, Khóhi	Khó yi	Wáng	Bíni	Úni
Our's	Nachaggi	Gnánjo yi	King	Jong ni	Ning ni
Your's	Khyod, Changgi	Khenjo yi	Ning	Nang chúrni	Nanókni.

* Diáng and Mánshi express mankind, met. F. Wával and Hiwá, man only.

English.	Tibetan.		Dhimál.	Bódó.	Gáro.
	Written.	Spoken.			
Their's One Two	Khochaggi gChig gNyis	Khonjo yi Chik Nyi	Ubal ko E'-long Nhé-long T	Bíchúrni Man-ché T Man-né T	O'nókni Gó-shá Gi-ning, A-ning
Three	gSúm	Súm	Súm-lang	Man-tham	Ga-thám, A-thám
Four	bZhi	Zhyi	Diá-long T	Man-bré	Bri
Five	Hna	Gná	Ná-long T	Man-bá	Bóngá
Six	Drúk	Thú	Tú-long T	Man-dó	Krók T
Seven	bDún	Dún	Nhí-long	Man-chini	Sining
Eight	hr Gyúd	Gyé	Yé-long	..	Chét
Nine	dGú	Gúh	Kúhá-long	..	Jú T
Ten	hChú, Thámbá	Chúh	Té-long	..	Chí T
Twenty	Nyi shú	Nyi shú	E'long bísa	Chokai-bá Bi-sha-ché	Rúng shá*
Thirty	Súmchú	Súmchú	Caret	Caret	Rúng shá chi
Forty	bZhibchú	Hip chú	Nhé hisa	Bishá né	Rúng ning
Fifty	Hnahchú	Gnap chú	Caret	Caret	Rúng ning chi
Hundred	hrGyátham-bá	Gyá, Gyá thambá	Ná bísa	Bishá bá	Rúng bongá
Of	Kyi, Gi, Hi, Yi	Gi	Kó	Ní	Ní
To	Lá, Tú, Dú, Ra, Sú	Lá	E'ng	No	Ná
From By, inst.	Nas, Las Kyis, Gin I S. His, Yis	Né, Diné	Shó	Phrá	Prá
With, cum, Sáth in Hindi and Urdú	Lhanchig	Dóng, Ou	Dóng, Ou	Jóng	Man
Without, sine, Bina in Hindi	..	Lá, Dá	Dópá, Dósá	Lago, Jong	Mon
In, On Now	Lá, Ná Déngtsé, Dá Déng	Thána	Mánthú	O'ngá, Géyá	Tóng chani ga-mang
Then When ?	Dé tsé Gang tsé, Nam	Lá Thándá	Rhútá E'lang	Chon, Nou, Ou Dánó	Púm vai, Pir vai Tayan
To-day To-morrow	Déring Sáng, Thoré	Thi dwi Khádwi	Kólá Hélou	Ohélá H Mábélá	Té éng Bíbá
Yesterday Here There Where ? Above Below	mDáng Hadina Héna Gangna sTengna	Sáng Dicho Hácho Khacho Teng, yégi	Júnni Anji Usho Hésho Ghe Rhútá Wó, Syú, Létá Magi	Gáhún Miá Imho Hobo Mouha Chhá	Tingní Ganáp Mé vai Yayan Wáng Bíé Pír vai Chúrik vai

* Bísa, Bishá vel Rúng is a score, and the system of enumeration is one score, one score and ten, two score and so on to 5 score for 100.

Cho kai ba in the Bódó column is 5 groats or Gandas for 20.

English.	Tibetan.		Dhimál.	Bódó.	Gáro.
	Written.	Spoken.			
Between	Bar, du	Bhar	Májhata H	Géjér	Majár vai H
Without,	Phyi, rohna	Chi	Báhiro H	Báhiou H	Báhír vai H
Outside					
Within	Nang, na	Náng	Lipta	Singou, Sing	Púma vai
Far	Né, Nyé	Tháring	Dúré H	Gajáng	Pijáng
Near	Ring	Tháni	Chéng só	Khátai	Katai
Little	Nyúng	Nigúva	A'toísá	Tísí, Kitisi	Kiték si
Much	Máng, Tu-mo	Má gúa	E'shúto	Gabáng	Takkri
How much?	Tsam, Tso-ma	Khá chevé	Hé joko	Béché báng	Bipáng
As, rel.	Hadétsúg	Khánda	Jédóng	Jirin	Jégándá
So, corr.	Détsúg	Théndá	Kódóng	Úrin	Úgándá
Thus, poz.	Jitsúng	Dindá	U'dóng	Úrin	Úgándá
How ?	Tsúg, Chit-sug	Kháché, Khánda	Hé sá, Hé dong	Bré	Bigándá
Why ?	..	Khá ín	Haipáli	Mánó	Átáng
Yes	..	In	Jéng*	O'ngó*	Há
No	Má, Mi	Mén	Má, Manthú T	Ongá	Ahá
(Do) not	..	Má	Má T	Dá	Tá
Also, and	Yáng	Yáng	Caret	Bi, Bo	Bá
Or	..	Mo	Ná	Ná	Ná
This	Hadé	Di	Ithoï	Imbé	Ímara
That	Dé	Phi-di	U'thoï	O'bé	O'mara
Which, rel.	..	Thinda	Jédong	Jé, Jai H	Jón H
Jón					
Which, corr.	..	Thé	Kódong	Bi, (that)	Wón H
Tón					
Which ?	Gáng	Khangi	Hai, Héti	Má	Ato, Bíyó
Kón					
What ? Kya	Chi	Kbáng	Hai	Má	Ató
Who ? Kón	Sú, Kha	Khangi, Sú	Héti	Chúr	Cháng
Any thing,	Chizhig	Khá ín	Hété, Haidong	Múngbó, Jish-láp	Harj mürj
Kúccch					
Any body,	Súzhig, Kóï	Sú ín	Hété	Jishláp	Já-tá ?
Kháchig					
Eat !	Zo	Só	Chá	Já	Sá
Drink !	hThúng	Thúng	Ám	Lúng	Lúng
Sleep	Nyan	Nyé	Jím	Múdúláng	Gúr
Wake	..	Caret	Lho	Jakháng	Sarai
Laugh	bGad	Gá	Léng	Mini	Mini
Weep	Nú, Shúm	Gnó	Khár	Gáp	Hép
Be silent	Khrog	Chúm	Chiká pahi, Mádóp	Srithá	Tápchilip tong
Speak	brJod, Smrós	Caret	Dóp	Rai	Brot, Borot
Come	Hóng, sByon	Syo	Ló	Phoi	Phoi
Go	Sóng, Gró, Gyú	Gyó	Hadé	Tháng	Loi
Stand up	hChhár	Lóng	Jáp	Jakháng	Chap
Sit down	hDúg	Deh	Yong	Jó	Abak
Move, Walk	hGro	Gyó	Tí, Hadé	Thó, Tháng	Loï

* Jéng and O'ngó mean rather it is, hast in Persian, than simple assent.

English.	Tibetan.		Dhimál.	Bódó.	Gáro.
	Written.	Spoken.			
Run	rGyúg	Gyúgé, Chong	Dháp	Kbát	Talok
Give	hBúh, Phúl, Thona	Phing	Pí	Hot	Há
Take	hLán, Júng, Hén	Léng, Yá	Rhú	Lá, Ná T?	Lé, Lau
Strike	bDún, rDig	Dúng	Dánghai T	Sho	Tok
Kill	Shig, Sod, hGúm	Sé	Sé T	Shothát	Tok tat
Bring	hKhyon, sKych	Bá syo	Chú má	Lá ho	Láphá
Take away	hKhúr, bKhyer	Bák song	Chúng pú	Láng	Léláng
Lift up, raise	hDég, Slon, sNyoh	Khúr	Lhopá	Bokháng	Paicho
Hear	Nyám, gSon	Nyén	Hin	Khaná chong	Natám
Understand	Soms, Go	Sám	Bújhté rhú	Bújilá H	Bújai H
Tell, relate	hShod, hCbhod	Láp, Cbwé	Dop	Rai	Borot
Good	Bazáng-po	Yappo	Elká	Gham	Péném
Bad	Náng-po	Dúkpo	Máélká	Hamma	Sarchá
Cold	Gráng-po	Thammo	Tírká	Gúshú	Chikrop
Hot	Tshá-po, Dropo	Chábo	Cháká	Gúdung	Gútung
Raw	..	Zyémho	Sinkhá	Gatháng	Piting
Ripe	Sminbo	Chémbo	Minká	Gamang	Papman
Sweet	..	Gnármo	Tááka	Gadoi	Shamá
Sour	..	Caret	Dakká	Gaphá, Gakhoi	Phakká
Bitter	..	Kháko	Khákká T.	Gakhá	Háni
Handsome	Dsésmo, sTúgpo	Jébo	Rémká	Majáng	Némá
Ugly	Midsesma	Mén jébo	Máremká	Chap ma	Sarchá
Straight	Mistúgpo	Dránpo	Thángho	Thúng júng	Préng dén
Crooked	sGúrho, Túdpo	Kákpo	Kyoká	Khúngkrá	Kákrói
Black	Nágpo	Nákpó	Dááká	Gatcham	Pénék
White	dKárpo	Kárpo	Jééká	Gúphút	Bok láng
Red	sMúkpo	Márpo	Iká	Gajá	Písak
Green	hJáng kbú	Jhángú	Nélpá	Samsram,	Héng jeléng
Long	Ringpo	Rimbo	Rhinká T	Kháng shúr	
Short	Tbúngpo	Thún dung	Tótóká	Galou	Pillo
Tall, } man	..	Thomho	Dhángáká	Gúchúng	Bandók
Short } man	..	Mábó	Bángraká	Gajou	Pillo
Small	Cbhúng, Phra	Chún chúng	Mhoíká	Gahai	Bandók
Great	Chhénpo, sBombo	Bombo	Dhamká	Múdúi	Pamar
Round	zLumpo	Riri	Gúrmaká	Gédét	Gódá
Square	Grúb zhi (<i>angles</i> 4)	Thúzi (<i>angles</i> 4)	Dia thúni (<i>angles</i> 4)	Dúllút ni, To- lotni	Dóglot ni
Flat, }	..	Caret	ká	Kónámanbréni (kóná is H)	Koná bri ni (kóná is H)
Level		Sáriká	Somán ni H	Gakshan	
Fat	rGyagspo	Thó thembo	Dhámká	Gúpbúng	Kánéntwa
Tbin	Srobbo, Ridpo	Máho ?	Syénká	Gaham	Jot kréng
Weariness	..	Gyák	Caret	Myéng dung	Rewé kou
Thirst	sKóm	Khakúm	Chí ámli	Gáng dung	Chíka láng nóitwa
Hunger	ITógs	Tok	Mhítú	Unkwi dung	Máyú pbítwé

N. B. T post-fixed indicates a Tibetan etymon for the word, and H post-fixed, a Hindí or Urdú origin.

Thus it appears that there are, out of the above 190 words, derived from Hindí or from Tibetan, in Dhimál, in Bódó and in Gáro, as follows :—

Hindí Tibetan

Dhimál	8	19	Out of a total of 190 words of prime use and necessit Ergo, these are adopted words ?
Bódó	10	6	
Gáro	8	7	

*Journal of a passage down the Nerbudda, from Chikuldah to Baroach,
with notices of the most important obstructions to the Navigation.
By Captain FENWICK. Communicated by order of the Hon'ble the
LIEUT.-GOVERNOR, N. W. P.*

No. 127 of 1849.

*From A. SHAKESPEAR, Esq., Asst. Secy. to the Government, N. W. P.
To the Secretary Asiatic Society, Calcutta.*

Dated Agra, the 1st Feb. 1849.

General Department, N. W. P.

SIR,—In continuation of the letter to you from this Department, No. 746, dated the 31st May last, I am directed to forward, for submission to the Asiatic Society, a copy of Captain Fenwick's Journal of his passage down the Nerbudda, from Chikuldah to Baroach, in charge of boats laden with coal.

2nd. I am desired at the same time to forward the accompanying copy of an abstract of the two Journals which has been prepared in this office, and contains a notice of the most important obstructions to the navigation, which are met with in the course of the river. The matter contained in the Journals has not been found sufficiently full or connected to admit of the compilation of a clearer narrative.

3rd. It is probable that the Society may not consider Captain Fenwick's Journal, or even the abstract, sufficiently important to merit publication, yet as much regarding the navigation of the Nerbudda has already appeared in the Society's Journal, the Lieutenant-Governor is desirous to place on the records of the Society, the fullest information upon the subject, and hopes that some prominent notice of Captain Fenwick's passage and of its result may appear in the Journal.

I have the honour to be, Sir,

Your most obedient servant,

A. SHAKESPEAR,
Asst. Secy. to the Govt. N. W. P.

Agra, the 1st Feb. 1849.

Copy.

July 29th, 1848.—Left Chikulda at 8 A. M.

Miles.

- 12 To *Dhurmrall*. Not a rock nor a ripple.
 - 1 *Hurnphal*. No rocks in the channel nor any difficulty.
 - $\frac{1}{4}$ Enter the Borekheree rapids. Had all the boats put to on the right bank, and taking with me four of the best boatmen, viz. Mudun, Bholoo, Bunnia, and another, proceeded in my boat to examine the passage.
 - 1 *Borekheree*. Channel at the narrowest part about 60 feet very bad from the high waves. The boatmen sent back for the rest of the boats. All shipped in water. The double boat the most.
 - 2 River studded with bluff rocks, some of them several feet above the water, some just under the surface. This is a very bad passage. The channel in some places 40 feet wide; waves very high. All the boats shipped in water.
 - $\frac{1}{2}$ *Very, very bad*. High waves. Channel very rapid. Rocks every where, and with difficulty avoided. One of the boats got fixed on a rock in the middle. Other boatmen had to swim to it, and it took some time to get it off.
 - 1 Very bad rocks. The Channel very winding, intricate and dangerous.
 - $\frac{1}{2}$ Rapids. Very bad channel. Studded with rocks; 30 feet passage. Just below it a boat was dashed on a rock and completely lost; 38 bags of coal gone. The boatmen swam ashore; a bildar, who could not swim, was left on the rock during the night and brought off the next morning. Could not do it in the dark of the evening.
 - $\frac{1}{4}$ Put to on rocks; no village. The fleet separated for the night:
 - 3 boats got down $\frac{1}{4}$ mile. Mine and two others below the rock and rapid, and three boats above it.
- July 30th.—Put off at 8 A. M.*
- $\frac{1}{2}$ Some rocks in the channel and rapids; a very small pointed rock in the middle of the river which widens here, and becomes free from dangerous rocks on each hand.
 - 3 Clear and deep, only two or three rocks visible.

Miles.

A huge barrier of rocks across from bank to bank ; 30 feet channel near the right bank. This place is called *Kalee Kuraie*. High waves, rather bad ; no other practicable channel.

At 300 yards a bad rock in the middle under water, very dangerous. Current very rapid and rushing on it.

1 Isolated rocks all the way. Channel not bad, being broad and deep, near the left bank.

1 Clear and deep. Bluff high rocks in several places ; three channels, not difficult. The left hand one is the best.

A whirlpool, but not bad at present.

1 Clear.

A rapid head of the Dussana barrier and falls. Dangerous rapids from the channel not being well marked. *Very* high waves for 400 or 500 yards. All the boats shipped in water, except the large boat, Rewa Sunkur. The double boat the most.

1 A field on the right bank belonging to Dussana.

$\frac{1}{2}$ *Dussana*.

A rapid.

$\frac{1}{2}$ High waves the whole way ; rocks in the channel, which is 40 feet wide, 10 feet deep, as almost all the channels are just now.

1 Rocks the whole way, but passage not difficult or dangerous, being broad and deep.

A rapid, but not dangerous, deep water and good channel.

$\frac{1}{4}$ Bad rocks in the middle of the channel.

1 Not difficult.

A rapid for 300 yards ; waves ; a whirlpool, but not bad just now. Rocks under water, channel broad and deep.

1 Deep water ; rocks immersed and isolated all across ; waves. The river has widened for the last two miles.

Bad rocks, some under water, some appearing. The channel near the right bank ; deep and good.

Kurhall, on the left bank. Found the lost boat on a rock, one side smashed in altogether, totally useless.

2 Clear. Abundance of water.

Some rocks in the middle of the river and near the right bank, passage wide and easy ; ripples.

Miles.

2 Clear, deep and broad.

A huge, rock island on the right hand at the confluence of the Hutnee Belin rocks on the left hand. Passage broad and deep.

2 Clear and deep from bank to bank.

A village, or cultivations on the right bank.

A bluff, long, rock, island near the left bank. Broad, clear and deep stream on the right hand.

$\frac{3}{4}$ A long range of bluff rocks in the middle of the river, deep ; good channels on either side.

$\frac{1}{4}$ A rock island near the right bank. Passage on the left hand.

$1\frac{1}{2}$ A barrier, and rapid. Rocks and waves across from bank to bank. Channel on the left hand near the shore—only 20 feet wide.

$\frac{1}{4}$ The head and first of the Bheetara barrier, falls and rapids ; *very, very bad*. The river studded with low rocks, from bank to bank, and apparently no passage.

Six bags of coal were taken out of the double boat this morning and put on some of the others. Rewa Sunkur taking 4 maunds more, making her cargo 5 marrees and 10 maunds.

Put to at $\frac{1}{2}$ after 2 p. m. on rocks on the left bank opposite Bhutara.

$\frac{1}{2}$ *Strong current.* The boats let down with ropes, brushing along the sides of perpendicular precipices 20 to 30 feet high, along the left bank ; the current rushing towards the barrier.

This barrier, or ridge of rocks, extends for about 300 yards.

Studded with rocks, some just above the water, some under ; no practicable channel. The boats were let down with ropes, and by the hand, knocking and bumping on the rocks the whole way, and in some places dragged over ; 20 bags were taken out of Rewa Sunkur and carried over the rocks for about 150 yards. It and the double boat were taken over with much labour and difficulty, and we did not get over the work before 12 o'clock.

This passage is very tedious, but not so dangerous, or attended with the same risk, as in that below the Hirnphal for about 6 miles. *Three* ropes cannot be used, or punting be resorted to, and the oars are not powerful enough to command the boats

Miles.

through the winding channels—the current rushing on rocks on all hands.

$\frac{1}{2}$ Pretty good.

The Beytana Ghat barrier. Rapids and falls ; put to on the right bank to examine them. Forbidding and fearful. The main stream is on the left hand, *very, very, very bad* for 300 yards. High waves. Almost a direct fall, carried my boat over with 4 of the best boatmen to test it. The boat nearly filled. The laden boats could not have been taken down by this channel ; examined a narrow passage between rocks for 300 yards on the right bank. This is bad too, but there is no other ; it is about 18 feet wide.

All the Chikuldah boats were lightened of 12 maunds each, Rewa Sunkur 13 maunds, and the double boat 24 maunds. The two latter and two of the Chikuldah, largest and best boats, were taken down the left or main channel, and four of the latter by the narrow one. The latter were managed with bamboos, the former with oars and paddles. Ropes cannot be used here. All shipped in water, and the double boat, as usual, a good deal.

The right hand channel is dangerous, from not being more than 18 feet wide, with pointed, projecting rocks on either hand. In one place the waves, here too, were very high. Almost a direct fall. The water several feet deep. The coal, which was landed, was carried over the rocks for some 500 yards.

- 1 Put up on the rocks on the right bank a little below the village of Bheetara and the rapids, the boatmen being knocked up and it being late.

Left from below Bheetara at 7 A. M. The river has fallen about 2 feet since yesterday evening. Leaving the rest of the boats moored, I proceeded in my boat with Mudun, Bholoo, Bunnia and another, to examine the passage below, which appeared to be full of rocks and rapids.

At 300 yards there is a pointed rock in the middle of the passage, badly situated, just above the surface, the current rushing on it with great force ; deep water.

- 1 Rocks and rapids the whole way, channel not well defined. My boat was put to and the boatmen sent back for the others.

Miles.

- ¹ *Hailkurree.* A gut or strait, between perpendicular, precipitous cliffs, 20 and 30 feet high, near the right bank. Deep water and slight current ; width 70 or 80 yards. A very remarkable passage.
- ¹ ² High rocks on either hand ; channel about 150 yards or so ; deep water ; a bad place for whirlpools, as the villagers say.
- Serkurree, on the right bank.
- Serkurree barrier and rapid, called *Gulchee Ghat or Tar, a very, very, very bad* passage : rocks across from bank to bank, some just above the water, some under. The latter are the worst ; only one difficult channel in the middle about 40 feet wide ; deep water. Current rushing. Half the day lost in bringing the boats over.
- For 100 yards channel from bank to bank, hen rocks. A whirlpool and then a very deep pool.
- A deep broad pool, a formidable, large whirlpool, dangerous ; a single mango tree on the left bauk points out the spot.
- At 400 yards the village of Sadree on the left bauk. A broad, deep pool.
- At 300 yards a rapid, broad channel in the middle of the river. On either hand very bad rocks.
- A village just below on the right bauk. A little cultivation on either hand.
- ¹ ² Deep pool. Several isolated rocks. Channel deep and broad in the middle.
- Rocks and ripples.
- ¹ For first 300 yards, broad and deep channel on the left hand.
- ¹ ⁴ Deep pool.
- Rocks on the right hand. A rock island, channel on each side.
- ¹ ² A pool.
- A bad rock in the middle just above the water, a very little ripple to denote it.
- A village on the left bank ; a deep pool ; rocks on the right hand. Fields on the left bauk.
- ³ ⁴ Clear.
- Rocks on the right hand.

Miles.

$\frac{1}{2}$ Nanka Ghat, barrier, rapids, &c. *very, very, very bad.* The boatmen compared it to Shabe Surannah; I examined the largest channel, which is in the centre, in my boat, and found it fearfully obstructed with rocks, rapids, rushing current, and their attendant perils; waves peculiarly high, and little whirlpools, or eddies. The water swelling and curving over the rocks and then falling headlong into a deep trough. All this extends for $\frac{1}{4}$ mile. Rewa Sunkur was dashed against a rock and nearly lost. Luckily none of the laden boats came down by this channel. Signals were made in time to prevent them. They took to the left bank and came through another passage along the shore. Shallow, with rocks, and waves, but nothing to be compared to the other.

Put to at sunset below the falls, on the left bank, Selakda village; on the right bank Gunnoo Patail.

2nd August, 1848. Left at 6 A. M.

$1\frac{1}{2}$ A deep pool.

A bad rapid channel near the left bank.

$\frac{1}{2}$ A very bad rapid and whirlpool; obliged to use ropes.

$\frac{1}{2}$ A pool.

A very bad rapid; high waves; passage along the left bank.

$1\frac{1}{4}$ Rocks, rapids and high waves; a very bad passage. I came down in my boat by the left-hand channel, which we found not practicable for the laden boats; sent back the boatmen to bring them down by the right-hand channel, which is very shallow.

$\frac{3}{4}$ Deep strong current, clear channel.

Put to to examine below; rocks everywhere; one of the boats, the Pundeth, struck a rock and was nearly lost.

The village of Chipha on the right bank.

$1\frac{1}{2}$ Half the way clear, then bad rocks, rapid and high waves.

As usual, I took my boat down with Mudun, Bholoo, Bunnia and others, to examine the passage; found *this one* not practicable for the laden boats. The channel to the right was selected, and they went back for them. To prepare for accidents I had my boat ready below the rapid in the worst place. Ropes could not be used. There is a whirlpool under the fall or rapid; one

Miles.

of the laden boats first coming down, struck on the rock in the middle and at the head of the channel, but got off; and was enabled to reach the shore and land the coal before it filled. Shortly afterwards two boats, although they avoided the rock, were dragged into the rapid and waves, swamped and went down bodily; nothing more seen of them; then some of the boatmen swam ashore. Some were picked up by my boat; one young man got into the whirlpool and I gave him up for lost fortunately he got hold of an oar, and being an expert swimmer, landed himself low down. One of the two latter boats being under water for some time, rose again to the surface, almost erect in the centre of the whirlpool, and was brought to land. All this happened in the evening about 1 mile above Hanep.

61 maunds or bags of coal lost to-day.

Some of the builders and several of the boatmen have lost every thing they had—pots, pans, clothes, &c.

This morning, when leaving Selakda, the following arrangements were made and orders given accordingly:—Mudun was appointed chief, Bholoo and Bunnia his deputies. My boat was to lead at 200 or 300 yards or more in advance, according to circumstances. Rewa Sunkur to follow, then the Sangur or double boat. The rest were named too, and to come next according to their appointed order. The Karkoon's boat with only 5 bags of coal, was to bring up the rear; a red, a black and white flag was kept in my boat to make signals; on the red being hoisted all the boats were to pull ashore to the left bank instantly. The black pointed to the right bank, and the white directed to follow my boat.

3rd August, 1848.

Left above Hanep at 9 A. M. The two boats were repaired, 13 bags of coal put on board the small one, and 23 bags on the other, and 7 bags were taken in my boat. The Sangur, or double boat, was also, consequently lightened.

I A deep pool.

A bad rapid. Rocks just above the water in the middle.

Miles.

Bhurroorgam, on the left bank.

- 2 A strong current and whirlpool.

Bhallagooree called *Byjee ka Phur*, a very narrow passage. High rocks on each hand, a very bad and dangerous whirlpool, very high waves ; some of the boats had narrow escapes.

- 1 A narrow passage. Huge rocks on either hand ; stopped here of two hours and sent on boatmen to examine the rapid and passage below.

$\frac{1}{4}$ A very bad channel near the left bank. A bluff rock island.

- 1 A bad rock in the middle of the channel. High rocks on each hand. A whirlpool.

- 2 Strong current ; a whirlpool ; a rapid. Two rocks in the middle. High waves.

$\frac{1}{2}$ Rocks, rapids and waves. A very bad and difficult passage. Peepulchope on the left bank.

- 1 Put to at 5 P. M. on the left bank.

Half of the boat which was lost yesterday, found here.

4th August, 1848.

Left below Peepulchope at 7 A. M.

The river has risen a good deal.

- 1 Stream rapid and broad.

A rock island on the right hand.

$\frac{1}{2}$ Rocks in the channel. A rapid and waves.

- $\frac{1}{2}$ The same as above. There are two channels here, some of the boats came down by the right hand one, and some by the left passage. The latter is the worst.

$\frac{1}{2}$ Clear. Put to to examine below.

Rocks and strong current in the channel.

- 1 A rapid ; rocks on the right hand.

- 1 A rapid ; rocks on the left hand. Cultivation along the right bank teak trees.

$\frac{1}{2}$ A bad rock on the right hand, the current rushing on it.

A village on the right hand.

A rapid and high waves.

- $\frac{1}{2}$ A bad rock in the channel ; a rapid ; high waves. Two date trees on the left bank. Cultivations.

Miles.

A large bad whirlpool.

$\frac{1}{4}$ Put to to examine the rocky passage below.

$\frac{1}{4}$ Strong current. A rapid; very bad rocks in the middle of the channel. Bamboo bushes begin to appear.

$\frac{1}{2}$ High rocks almost across the river. Put to on the right bank to examine the passage. Channel along the left bank, not bad.

2 Clear channel along the right bank and middle, very strong current. A village on the left bank. River rising.

$\frac{1}{4}$ Rocks in the middle of the channel. Put to examine and allow the boatmen to take their breakfast.

1 Rocks, rapids, waves, *very* bad ; my boat was dashed against a small pointed rock in the middle of the channel. It filled partially, heaved, swung round and plunged into the trough and waves below, but got out again ; a laden boat would have gone down.

Put to to examine below.

$\frac{1}{4}$ A very bad rock, and below it a whirlpool,—very formidable. Almost all the boats got into it, were taken round and round for several times, dashed against each other, and got jammed on the vortex for a minute or two.

$\frac{1}{4}$ Bad rocks and rapids. River still rising.

$\frac{1}{4}$ Very bad, whirlpools, waves, &c.

$\frac{1}{4}$ A very bad rock in the middle of the channel, and a strong current rushing on it very dangerous.

Put to to examine the channel below.

$\frac{1}{4}$ A rock on the right hand of no consequence.

$\frac{1}{2}$ Beautiful plantations along the right bank, of palms, mangoes, Mowah trees and cultivations, interspersed with huts the whole way.

Two bad rocks in the middle of the stream.

$\frac{1}{2}$ Rocks in the middle, strong current, plantations, &c., continuing along the right bank, belonging to the village of Gudier.

1 Clear broad stream ; put to to examine a rapid below.

Strong current, rocks on either hand but not dangerous. River still rising slowly.

1 *Very, very bad* rocks, a rapid and whirlpools, Surpon barrier, &c. Sulpan or Surpon ; Mahadeo temple on the left bank.

Put to under Surpon at 5 p. m.

Miles.

5th August, 1848.

8 A. M. at Surpon, boatmen attending the temple. The river has risen a little during the night. Heavy rain all night and now continued.

Put off at 9 A. M. Took another boatman on my boat to-day, having hitherto had only three.

Rocks on the left hand to be avoided ; strong current.

$\frac{1}{4}$ Rocks on the right hand. Current strong.

$\frac{1}{4}$ Rocks ; a rapid ; caution required. Dangerous waves and a bad whirlpool.

$\frac{3}{4}$ Rocks on each hand. Channel good.

A pagoda on the right bank.

A village on the left bank ; palms, mangoe trees, and cultivations and huts along the right bank.

2 Rapids ; currents and rocks but not bad.

Commencement or head, of the *Mookree Ghat, Phal Tar* or *barrier falls, &c.*

Put to to examine the passage. Huts, palms, &c. &c., along the right bank.

Rocks all over and across the river. Channel in the middle 40 or 50 yards wide, very strong current and high waves.

$\frac{1}{4}$ Clear.

Strong current ; a rock on the right hand ; channel along the left bank.

$\frac{1}{4}$ Strong current the whole way ; very bad rocks in the middle. Channel near the left bank.

A whirlpool in the middle, rather formidable current rushing towards rocks on the right hand, very dangerous ; numerous eddies or little whirlpools.

$\frac{1}{2}$ Mookree village, on the left bank.

Rocks, rapids, waves, whirlpools ; all very bad.

A large, huge rock island in the middle ; my boat took the left channel, which proved to be very bad and dangerous. Whirlpools, waves, strong current, &c. all very formidable ; we thought ourselves in peril for awhile. The boat was whirled and spun round and round, nearly filled by the waves and was dragged

Miles.

towards some rocks on the right hand, and just escaped by a few feet from being dashed to pieces. The boatmen, especially Bholoo, shewed great energy and presence of mind, and expertness, on this occasion. His coolness was completely unmoved by the eminent danger ; with a few strokes of the paddle he kept the head of the boat off from a rock which we expected it would be impossible to avoid.

- $\frac{1}{2}$ Put to on the left bank ; all the other boats were carried or forced into the right hand channel, which luckily proved to be not so bad ; got down safely and put to on that bank.

River studded with rocky channels. Current rushing through them with sluice force, *all very bad*. It took some time to make a selection by trying an empty boat over some of them.

I consider this Mookree barrier as one of the very worst in the Nerbudda. I had a good view of it and the river for two miles or so, above and below, from a high rock, and it certainly looked quite frightful. The boatmen think the river half full, and say that it was higher when Captain Evans went down last season.

The Karkoon's boat was first taken down, the boatmen returned and carried over three others, *with 6 men to each*, and so got the whole down safely. My boat came into the right hand channel with a great deal of difficulty.

- $\frac{1}{2}$ *Very, very bad* rocks. A rapid and a whirlpool at the bottom of the channel, all the above from the upper part of the Mookree falls, &c. There is a *worse* passage yet below. At 2 p. m. all the boats arrived below the above whirlpool, and put to on the right bank.

- $\frac{1}{4}$ Strong current, a *torrent*, rapid waves, &c. &c. along the left bank, and in the middle ; no boats could possibly live there just now, and this is the *main channel*. The boats were let down with ropes, along the rocks, and over shallows on the right bank ; tedious work.

The main channel, or stream on the left, above alluded to, is studded with destructive rocks, the waves raging and lashing over them in spray and foam, numerous little whirlpools, or eddies

Miles.

moving down in circular sweeps, and bubbling up from the bottom with a roar.

From nearly the middle of the river, to the right bank, there are bluff rocks with narrow passages of 10 and 12 feet, with little falls, of 2 and 3 feet, and then suddenly deep.

$\frac{1}{4}$ Along the left bank the *torrent passage* continues worse than ever ; nothing could live in it.

Neemree on the right bank. Thonia on the left bank, abreast of the worst part of the channel.

Just below there is the *fearful whirlpool*. It embraces the whole bed of the river, and I think we have scarcely encountered any thing so awful and terrific. The boats were let down with ropes along the rocks, on the right bank, still with much apprehensions, for had they come within its influence nothing could have saved them. I take the river at this place to be between 300 and 500 yards wide or more.

$\frac{1}{4}$ Rocks on either hand.

For 400 yards strong current. Eddies and little whirlpools.

Deep pool, no rocks in the river. The hills are receding, villages, cultivations, plantations and topes and palms and other trees, all the signs of civilization and of a thriving people, are here exhibited on both banks of the river.

Fine broad little pools.

$\frac{1}{2}$ Last of the hills on the left bank.

2 Pool ; a noble stream.

1 Current and waves, sunken rocks dangerous from their not being visible.

A pagoda on the right bank.

$\frac{1}{2}$ Rocks and rapids, dangerous from the rocks not being seen, but immediately under the surface.

$\frac{1}{2}$ Put to at Emrio ; on the right bank Rajpeela Elayua, at 6 p. m. Just at this moment the empty boat with the Pundeth struck on a rock $\frac{1}{2}$ mile above, filled and got fixed. Luckily the river is falling. Took my boat with seven selected boatmen. Mudun and Bholoo, Bunnia, Gylia and others, and after great exertions got up to the rock, when it became completely dark. In trying

Miles.

to approach it near enough to throw over a rope, we found it could not be done, the current dashed us away past it, and we were obliged to leave the Karkoon and the three boatmen to their fate for the night, relying upon the river not rising, in which case they would be quite safe.

However to provide against every thing, I had one of the boats emptied forthwith, and kept ready to pick them up in the event of the boat floating off the rock. At this moment (it was pitch dark) we heard a shout, and soon after the voices of persons in the water, and shortly after all the four landed safely where we had put to. The boat having missed them. The Karkoon too had managed to reach the shore with the help of a couple of bamboos lashed together, but he was nearly exhausted. The rock is in the middle of the river, and the stream here is $\frac{1}{2}$ mile broad, or more.

6th August, 1848.

The boat was brought off from the rock this morning.

Left Emrio at 10 A. M., having repaired the boat as well as we could, but it is quite shattered and will barely keep afloat.

- 1 Rocks in the middle, a pagoda on the right hand. Small sunken rocks and ripples over them on the right.
- 1 Gurhasur ; on the right bank a Gurhee on the top of a small hill and a pagoda at the foot. Some sunken rocks and ripples along and near the right bank.
- 1 Aktesur pagoda on the right bank ; nothing to remark, not a rock nor a ripple ; smooth stream, from bank to bank ; arrived at Chaudode in the evening and put up in an old house of the Guikwars.

7th August, 1848.

Left Chaudode at sunrise and arrived at Leeloora, or Lalore, at 5 P. M., on the right bank.

8th August, 1848.

Left Lalore at 4 A. M. Inspected the Kubar Bar on Muhunt's Island. Put to on an island at 4 P. M.

9th August, 1848.

Left the island at 6 A. M. and reached Baroach at 8 A. M.

Note on Captain FENWICK's passage down the Nerbudda in charge of boats laden with coal.

Captain Fenwick (late of the Nizam's service) started with ten boats laden with coal, from below the Dharee falls, on the 5th of April, 1848, under instructions from the Resident of Indore, and has noted minutely in his journals all the difficulties and obstacles which he met with, but as we have ample information regarding the river from the Dharce falls to Hirunphal, and as it is allowed that no absolute obstructions to navigation exist in the lowest portion, i. e. from Tulluekwarrah to the sea, it will be sufficient to notice here only the most prominent points connected with those parts, and confine ourselves chiefly to the portion between the Burkheri rapids, just below the Hirunphal, to near Tulluckwarrah, respecting which we possess the least information, and which at the same time is evidently, (irrespective of the detached obstructions, such as those at the Dharee and Sahesurdarrah falls, and at Hirunphal), by far the worst part of the river to navigate.

Captain Fenwick reached Chikuldah from the Dharee falls without any accident, on the 20th of April, having been 15 days on the way. The distance he calculated to be $86\frac{3}{4}$ miles, which he divided as follows :—

April 5th.—To Sillanee $9\frac{3}{4}$ miles; no unusual difficulty met with.

April 6th.—To Alliagaum, $12\frac{1}{4}$ miles. A narrow passage with four feet water and 3 turnings, difficult for laden boats, which were let down with ropes; met with 2 miles from Sillanee; $1\frac{1}{2}$ mile further on Bhalrai rapid, very difficult passage, extending for more than 100 yards; from this to Katghurra $7\frac{3}{4}$ miles, nothing particular. The Katghurra rapid extended for about 600 yards, studded with rocks, channel dangerous, with 4 or 5 feet water. Laden boats eased down with ropes.

It appeared to Captain Fenwick that in the then state of the river between Dharee and Alliagaum, boats of more than 6 feet beam, 30 or 35 feet long, with $2\frac{1}{2}$ feet wall sides, flat-bottomed, the bottom side planks of one log, scooped out, would be the only ones that could be generally used. During the monsoon he thought no boats could live at some of the places, where most dangerous whirlpools and high waves would be formed at that season. The boatmen corroborated this opinion.

April 8th.— $7\frac{3}{4}$ miles to Murdana Ghat. Several places mentioned as dangerous from rapids, rocks, and shallow water.

April 9th.—To Mundlusur, distance 12 miles, Murdana rapid extending 300 yards, channel in some places 8 feet wide with 2 feet water. For 2 miles before reaching Soolgaon, rocks all the way and shallow in many places.

April 13th.—To Myhesur $3\frac{1}{2}$ miles.

April 15th.—To Suhesnrdhara, one mile ; falls, rapids and very bad rocks in the chanuel, empty boats eased down with ropes with great difficulty.

April 16th.—To Akburpore, 5 miles ; chief difficulty a rapid about half way. Channel 8 feet : four feet fall and 2 to 3 feet water. Very bad rocks on eitheir hand. The boats were half emptied and let down with ropes, men holding on each side, and reladen at the end of the rapid, which winds along for 30 or 40 yards, dashing against the rocks on either hand with great force.

April 17th.—To Kuttora, $8\frac{1}{2}$ miles. At Akburpore changed two of the boats, which were old and in a leaky state. Several rapids and shallows in this portion, of which the Bhownesur rapid was the worst. Length 40 yards, 2 feet water over the rocks, eight feet passage, channel winding, difficult and dangerous, boats let down with ropes with much trouble. “This is one of the worst rapids in the river. At the bottom there is a fall of 3 feet, 7 feet passage, rocks on each hand, and a very bad and dangerous one in the middle of the outlet, to be feared the most. This rock should be removed.”

April 18th.—To Kiruee, $12\frac{1}{2}$ milcs. Several troublesome obstructions met with. The boats were taken over one fall of 2 feet on bamboo poles.

April 19th.—To Lahua-Burda, 6 miles. Very shallow water in several places ; below Oordunna “a very shallow part, 9 inches water. A channel had to be made by removing the loose stones from the middle and piling them up on each side for 150 yards, to deepen the stream to 15 inches, when the boats were dragged over. Half the day taken up in the above work.” Two more similar shallows overcome in the same way, about $\frac{1}{4}$ of a mile lower down, and then a bad rapid to be worked through very cautiously, succeeded by rocks and shallows.

Note by Captain Fenwick.—“The laden boats require 18 inches of

water to float freely. The largest boat is 31 feet long and less than 5 feet wide, laden with $2\frac{1}{2}$ marries.

April 20th.—To Chikuldah, $8\frac{1}{2}$ miles. The navigation characterized by the usual impediments. A very bad rapid met with below Piplade, 15 inches water, rocks in the channel, against which the current rushed with great force. A fall of 3 feet, over which the boats were dragged.

April 22nd.—Captain Fenwick started from Chekuldah with a single boat, measuring 30 feet in length by $4\frac{1}{2}$ wide, to examine the Hirunphal, which he describes thus:—Deep channel, 8 feet wide, current not strong in fall. Two bluff rocks in the middle of the river, one on either hand from the Phal.” Deep channel between rocks, 10 or 12 feet wide. Deep narrow pool, slight current; Hirunphal Ghat, a fall of 6 feet in 30, passage 8 or 10 feet, with projecting pointed rocks on each side, very bad and dangerous, 100 yards rapid.”

On the 23rd of April Captain Fenwick returned to Chikuldah, and appears to have proceeded shortly afterwards with two carts laden with 48 maunds of coal to Tulluckwarrah, and had reported his arrival at Ali-Rajpore on the 30th of April, and expected to reach Tullukwarrah on or about the 6th of May. It was after his return to Chikuldah from this journey, I conclude, that he again embarked in charge of some boats laden with coal on the 29th of July 1848, from which date the second portion of his journal dates.

July 29th.—Left Chikuldah, and as far as the Hirunphal, 13 miles, met with no rocks in the channel nor any difficulty. Entered the Bhurkhery rapids, very difficult navigation. A boat, carrying 38 bags of coal was dashed on a rock and completely lost. Distance traversed $18\frac{1}{2}$ miles by guess. Put to for the night on rocks.

July 30th.—After a short distance the river widened, but then came “a high barrier of rocks across from bank to bank, 30 feet channel near the right bank. This place, called *Kalee-Kuracee*. High waves, rather bad, no other practicable channel. At 300 yards a bad rock in the middle, under water, very dangerous. Current very rapid and rushing on it; about 3 miles further a rapid. Head of the Dussana barrier and falls. Dangerous rapids from the channel not being well marked, very high waves for 400 or 500 yards. All the boats shipped in water, except the large boat, the double boat the most.” From this no particular difficulty till within $\frac{1}{4}$ of a mile of Bheetara, on the right

bank, where the falls and rapids were very bad. "The river studded with low rocks, from bank to bank, and apparently no passage. The cargo of the large boat was here increased by 4 maunds, (taken out of the double boat, making her cargo 5 marries and 10 maunds.) Distance traversed 20 miles by guess. Put to on rocks on the left bank opposite to Bheetara.

July 31st.—At $\frac{1}{2}$ mile distant "a strong current. The boats let down with ropes, brushing along the sides of perpendicular precipices, 20 or 30 feet high, along the left bank. The current rushing towards the barrier. This barrier, or ridge of rocks, extends for about 300 yards, studded with rocks, some just above the water, some under, no practicable channel. The boats were let down with ropes and by the hand, knocking and bumping on the rocks the whole way, and in some places dragged over. Twenty bags were taken out of Rewa Sunkur (the large boat) and carried over the rocks for about 150 yards. It and the double boat were take over with much labour and difficulty, and we did not get over the work before 12 o'clock. This passage is very tedious, but not so dangerous or attended with the same risk as in that below the Hirunphal for about 6 miles. *There* ropes cannot be used, nor punting bc resorted to, and the oars are not powerful enough to command the boats through the winding channels, the current rushing on rocks on all hands." For half a mile, pretty good and then the "Beytana Ghat barrier. Rapids and falls. Put to on the right bank to examine them. Forbidding and fearful. The main stream on the left-hand, very bad indeed for 300 yards. High waves. Almost a direct fall: carried my boat over with 4 of the best boatmen to test it. The boat nearly filled. The laden boats could not have been taken down by this channel. Examined a narrow passage between rocks for 300 yards on the right bank. This is bad too, but there is no other; it is about 18 feet wide."

All the Chikuldah boats were lightened by 12 maunds each. Rewa Sunkur (the large boat) 13 maunds, and the double boat 24 maunds. The two latter and two of the largest and best Chikuldah boats were taken down the left or main channel and four of the latter by the narrow one. The latter were managed with bamboos, the former with oars and paddles. Ropes cannot be used here. All shipped in water, and the double boat, as usual, a good deal.

"The right hand channel is dangerous from not being more than 18 feet wide, with pointed, projecting rocks on either hand. In one place the waves here too were very high. Almost a direct fall. The water several feet deep. The coal which was landed was carried over the rocks for some 500 yards."

Put up on the rocks on the right bank, a little below the village of Bheetara and the rapids, the boatmen being knocked up and it being late. Distance traversed in the day, 2 miles by guess.

August 1st.—The river had fallen about 2 feet since the preceding evening. Leaving the rest of the boats moored, Capt. Fenwick proceeded in his boat to examine the passage below, which appeared to be full of rocks and rapids. Rocks and rapids and usual obstacles met with for about $2\frac{1}{2}$ miles, and then an extremely bad barrier and rapid at Sirkurree. Half the day spent in bringing the boats over.

At $\frac{1}{2}$ mile from Silakda, where they put to, another extremely difficult barrier Nanka ghat. "The boatmen compared it to Sahesurdarah. I examined the largest channel, which is in the centre, in my boat, and found it fearfully obstructed with rocks, rapids, rushing current and their attendant perils; waves peculiarly high, and little whirlpools or eddies: the water swelling and curving over the rocks and then falling headlong into a deep trough. All this extends for $\frac{1}{4}$ mile. Rewa Sunkur (the largest boat) was dashed against a rock and nearly lost. Luckily none of the laden boats came down by this channel. Signals were made in time to prevent them. They took to the left bank and came through another passage along the shore. Shallow, with rocks and waves, but nothing compared to the other."

Distance gone in the day $5\frac{1}{4}$ miles by guess.

August 2nd.—The whole distance of six miles traversed on this day was characterized by serious impediments, several of which were happily surmounted without mishap, but at one mile from Hanep they were not so fortunate. On examining Captain Fenwick found that the left hand channel was not practicable for laden boats, and the right was selected. "To prepare for accidents," Captain Fenwick writes, "I had my boat ready below the rapid in the worst place. Ropes could not be used. There is a whirlpool under the fall or rapid. One of the laden boats, first coming down, struck on the rock in the middle and head of the channel, but got off and was enabled to reach the shore

and land the coal before the boat filled. Shortly afterwards two boats, although they avoided the rock, were dragged into the rapid and waves, swamped and went down bodily, nothing more seen of them then. Some of the boatmen swam ashore, some were picked up by my boat. One young man got into the whirlpool and I gave him up for lost. Fortunately he got hold of one oar, and being an expert swimmer, landed himself low down. One of the two latter boats being under water for some time, rose again to the surface, almost erect, in the centre of the whirlpool, and was brought to land. All this happened in the evening about 1 mile above Hanep." 61 maunds of coal were lost on this occasion, several of the boatmen and bildars losing every thing they had.

August 3rd.—Before starting "the two boats (which had been damaged) were repaired ; 13 bags of coal put on the small one and 23 bags on the other, and 7 bags were taken in my boat. The Saugor, a double boat, was also considerably lightened. At Bhallagoorec, a very narrow passage, high rocks on each hand, a very bad and dangerous whirlpool ; very high waves ; some of the boats had very narrow escapes." Similar difficulties were found in the whole of this day's voyage, which was calculated at $8\frac{3}{4}$ miles.

August 4th.—Left below Peepulchope and went about 14 miles to Soolpan, about 5 miles from which place Capt. Fenwick's boat had a narrow escape—"A laden boat would have gone down." At a short distance below this almost all the boats got into a formidable whirlpool, in which "they were taken round and round for several times ; dashed against each other and got jammed in the vortex for a minute or two." Some very bad rocks, a rapid and whirlpools near Soolpan.

August 5th.—To Emrio, on the right bank, about $10\frac{1}{2}$ miles. At the Mokree barrier, "rocks all over and across the river." After passing the village, a large rock island in the middle of the river. "My boat took the left channel, which proved to be very bad and dangerous, whirlpools, waves, strong current, &c. All very formidable. We thought ourselves in peril for a while. The boat was whirled and spun round and round, nearly filled by the waves, and was dragged towards some rocks on the right hand and just escaped by a few feet from being dashed to pieces. The boatmen, especially Bholoo, shewed great energy and presence of mind, and expertness on this occasion. His cooiness

was complete. Unmoved by the eminent danger, with a few last strokes of the paddle he kept the head of the boat off from a rock which we expected it would be impossible to avoid. "All the other boats were carried, or forced into the right hand channel, which luckily proved to be not so bad : got down safely." River studded with rocky channels, current rushing through them with sluice force. All very bad. It took some time to make a selection by trying an empty boat over some of them."

"I consider this Mokrec barrier to be one of the very worst in the Nerbudda. I had a good view of it and the river for two miles or so, above and below, from a high rock, and it certainly looked quite frightful. The boatmen think the river half full, and say that it was higher when Captain Evans went down last season. The Karkoon's boat was first taken down. The boatmen returned and carried over three others, with 6 men to each, and so got the whole down safely. My boat came into the right hand channel with a great deal of difficulty."

Three quarters of a mile below, the main chaunel or stream on the left, is studded with destructive rocks, the waves raging and lashing over them in spray and foam. "Quarter of a mile further worse than ever ; nothing could live in it. A little below there is a fearful whirlpool. It embraces the whole bed of the river, and I think we have scarcely encountered any thing so awful and terrific. The boats were let down with ropes along the rocks on the right bank ; still with much apprehension, for had they come within its influence nothing could have saved them. I take the river at this place to be between 300 and 500 yards wide or more."

Close to Emrio, on the right bank, where they put to for the night, one of the boats struck on a rock in the middle of the river, filled and stuck fast. The four boatmen and the Karkoon got safely to land fortunately, and the boat was brought off from the rock next morning.

August 6th.—Passed Gurreysir and Aktesur, and stopped at Chaudode.

August 7th.—From Chaudode to Leelore on the right bank.

August 8th.—Put to on an island beyond the Muhunt's island.

August 9th.—Reached Baroach.

Mr. Hamilton, the Resident at Indore, in forwarding this Journal, reported that 11 tons and 10 cwt. of coal had been delivered in the dock yard at Bombay by Capt. Fenwick.

Journal of a trip to Sikim, in December 1848, with sketch map. By Dr. A. CAMPBELL, Member of the Asiatic Society.

I had long wished to visit Sikim, but in vain. At last it came about as follows. In September last the Governor General, Lord Dalhousie, in reply to an application of mine for his authority to procure the permission of the Sikim Raja for Dr. Hooker's travels in his territory, directed me to address the Raja, and inform him that his Lordship expected, as an earnest of his constant professions of friendship for the British Government, that he would afford Dr. Hooker every facility for the prosecution of his scientific researches in his territory.

The Raja was addressed by me in suitable terms, but the result was in reality a flat refusal ; although it was speciously attempted to be concealed under various pretexts, the chief of which related to the dreaded wrath of the guardian deities of Sikim if their sacred land should be invaded by an English gentleman.

The whole of Sikim was said to be thus sacred ; the *most* sacred, and most jealously guarded of all its parts was Kunchinjinga,* and this was the special object of the traveller's research, as I had informed His Highness.

On the receipt of this letter I expressed to the bearer of it, and to the Raja's Agents with me at Darjeeling, how fully and palpably it displayed the real unfriendliness that existed at the Raja's Durbar, instead of the kindly feelings the Governor General had relied on, as evidenced in the Raja's correspondence with me, and with my Government. I pointed out how forcibly this view of the matter would strike His Lordship : and if the Raja was desirous of standing well with my Government, I informed them that no means could have been better devised to thwart the intention than the refusal of this simple, but direct request to His Highness. They expressed their entire coincidence in my view of the case, and urgently begged of me not to report the Raja's answer to Government until they could refer to the Durbar, and get fresh orders. This they expected would take 10 days ; and the Agent assured me that the required permission would in all probability be accorded. I waited accordingly for the required time, but to no

* Elevation of Kunchinjinga, 28,176 feet.

purpose, and was just despatching a letter to the Raja fully explaining my opinions on his Agent's proceedings, and on his own letter, when fresh orders arrived. They were not of a much more friendly tenor than the letter to myself, at least as they were communicated to me by the Agent ; but the upshot was, after much expostulation, and every effort made by me to ascertain the real nature of the orders, that the Agent agreed to allow Dr. Hooker to proceed, and to procure safe conduct and good treatment for him through Sikim to the Nipal frontier of Kanglanamoo via Paimiongehi and Jongri. It was Dr. Hooker's purpose to go on from Kanglanamoo to the Kanglachema pass of the snowy range, and to enable him to do this I had previously procured the consent of the Nipal Durbar through the Resident, and a guard consisting of a Havildar's party came from Ilamgurly* to Darjeeling to escort him.

After all the preparations were made the Raja's Agent raised a new and unexpected difficulty. He refused to allow the Nipalese guard to pass through Sikim with Dr. Hooker, and by this means fairly, or rather unfairly discomfitted me ; for I did not feel quite at liberty to say that his objection to the passage of the Nipalese, although forming part of Dr. Hooker's escort, was altogether unreasonable, and as he rested the ruin of the project on this only, he gained his point—which was delay. I ascertained to my full satisfaction, that from the beginning he had no intention of allowing the journey, and I believe that the objection to the Nipalese was a mere pretence to save himself from openly refusing the permission he had previously granted.

I had long ago made up my mind to the impossibility of carrying on business satisfactorily with the Sikim Raja, through his officers, until they should be differently and better instructed. The death in 1847, of the Dewan Ilam Sing, removed from the Raja's counsels the only man of any honesty, or to be at all trusted, in word or deed. Of this I have ample evidence, and was fully satisfied,† and as the Agent on refusing leave to the passage of the Nipalese guard, asked my permission to return to the Durbar, I gladly gave it, and wrote to the Raja an account of his proceedings, and said that what I had long felt as to the impossibility of transacting business with his officers would now

* Nipalese post, on eastern frontier.

† See my Office Records, *passim*.

be apparent to himself, and that as his Agent had left me, I should report the whole affair to the Governor General, and await his orders. I did so through the private Secretary, pending my formal report, and asked permission to visit the Raja, as the only means I now had of ascertaining his real sentiments and feelings towards our government. With a confidence in my good intentions, for which I feel most grateful, His Lordship readily gave me the required permission to visit the Durbar, but without any specific diplomatic powers for the occasion. This permission reached me on the 22nd November, my preparations were put in hand at once, and on the 29th I despatched a letter to the Raja communicating my purpose of visiting him. I informed him that I should leave Darjeeling about the 6th of December, and at the same time that I had that day sent 30 porters with grain, &c. in advance under charge of a Havildar, and 8 Sepoys, and I requested the Rajah's officer at Namgialachi to let the party proceed as far as the Teesta River, there to await my arrival.

On the 3rd, at daylight, when I was at Kursiang, I received a letter from my Moonshi with the food and guard at Namgialachi, as follows :

"Starting from Darjeeling on the 29th, and arriving at this place on the evening of the 1st instant, I made over your Honor's Purwannah to the Neboo of Namehi, as well as the letter for the Sikim Raja, and I informed him of my orders to proceed as far as the Teesta river, to which he replied, that he was unable to let me proceed without his Raja's orders ; that he would report the same, and further consult with the Mahapun Kada, and 2 or 3 other officers, whose arrival he was expecting that day ; further, he said that he would not allow you, Sir, to proceed, but that if you wished to go by force then they would lose their lives."

This was a bad beginning. I returned from Kursiang at once, hurried all my preparations, and started from Darjeeling at 2 p. m. of the 4th December for the guard-house above the Ruugeet river, where I arrived at 5 o'clock, and found my servants and all things ready to receive me. My equipment is as follows :—A tent made of two Nipal blankets, which when pitched covers 10 feet of ground by 8, and with the poles and carpet is an easy load for one man. It contains my bed, a chair, and a 3-foot square table. I have two ponies, two table servants, a valet, 4 Chuprassies, a Moonshi, an Interpreter ; a guard of 8 Sepoys,

and a Havildar, 38 porter loads of rice, flour, salt, gram and choorah, with 20 more loads of personal baggage of my own and the servants, and 3 sirdars for their coolies. A double-barrel gun, a brace of pistols, a compass and thermometer, and a Nipal dandy or litter—in case of illness, or accidents end the list. The further sinews of travel are 400 rupees, principally in small coins, and some articles for presents, consisting of broadcloth, beads, snuff, rum, coral, rings, and some crystal vessels.*

At the guard-house, elevation 1600 feet, the feeling of warmth was delightful. The Thermometer stood at 68° and fell 4° only during the whole night ; I hate cold, and all below the sixties is of this sort. It is greatly the fashion in the east to praise the weather when you are half frozen. Give me a temperate clime for comfort and pleasure ; any thing lower than 60° of Faht. feels cold, and cold, except in the subsequent re-action, is decidedly uncomfortable. It was a lovely morning on the 5th, a thin light purple fog rose from the noisy Rungno at daylight, and spreading itself over the deep valley of this stream to the south of the guard-house, had scarcely enveloped our gipsey-like encampment, when the sun, rising in perfect splendour, instantly dispelled it.

Not a drop of dew was formed at our encampment during the night. The grass was quite dry and the standing hairs of my blanket tent were without a globule. I do not understand this ; but will consult Hooker about it. I very much wish that he was with me. We were on a ridge half a mile lower down on the side of the spur, and all the way to the Rungeet there was a heavy dew.

The Pooah Hemp plant, *Boehmeria nivea*, is very abundant, and grows luxuriantly between the guard-house and the river.

We started at $\frac{1}{2}$ past 7 and had crossed 2 ponies by swimming, and 30 loaded men by a bamboo raft to the left bank of the Rungeet by $\frac{1}{2}$ past 9. The cane bridge—elevation above the sea 1000 feet—is in a very ricketty state indeed ; but I ordered the Badamtam Lepchas, who came down to ferry our party, to remain there a couple of days, and repair it. It was their duty under the old regime, Sikim Rajahs, to do this annually, and it may well be the same for the future. The Lepchas are expert enough ferrymen with the raft. It is made something like a boat, but more like a wedge, for it is very wide and open behind. The

* These particulars may be useful to future travellers.

water rushes through it, and over it too ; but it is quite safe. It is pulled to and fro across the river by a party on either bank. Strips of the large bamboo are used instead of rope for this purpose. Horses are badly and cruelly used in ferrying by the Lepchas, who give this noble beast no credit as a swimmer. They take him along side of the raft, holding his head high on the bamboos, and thus tow him across. The following is a much more simple plan, and causes little delay to the traveller. Take a log-line in your hand and cross on the raft ; let it be long enough to stretch across the river, leave one end on this side, and pay it out as you proceed. When you have landed look out for a good landing place for the horse some yards lower down. With the log-line tied to his bit let him be pushed into the stream, and you can with perfect ease guide him to the spot you have fixed for landing him, and he swims all the way unhampered and unchoked. My Lepchas never saw ponies swim alone before. They greatly praised the nata-tory performances of mine to-day.

When across the Rungeet you find a road running parallel to the stream S. E. and N. W. ; the turn to your left leads to Namgialachi ; the right one viâ Chadam to the Teesta and Dukeeling. After $\frac{1}{2}$ a mile or so of level road you ascend in an easterly direction along a steep path through long grass, and Sal trees, for a couple of miles, when you cross a bubbling brook running rapidly down the hill from the south of you. Beyond this brook the hillside is a fine open expanse of small bamboo grass with Fir* and Sal trees ; the soil, whitish clay, dry and hard ; and it continues so for 3 or 4 milcs, when you top the ridge of Meksneeo. Here the road takes a northerly direction, you lose the Sal, Pines and grass, and have the vegetation of 3000 feet. I have noted bearings from this spot, which are appended. The road continues to skirt the south face of Meksneeo and Silukfoke, which is rocky and precipitous, until you come to an open space at the west end of a ridge, which running east connects Namgialachi with Silukfoke and Tendong. Namgialachi is about half way between Silukfoke and Tendong, and about 3000 feet I think lower than Tendong. Not being able to reach Namgialachi on the 5th, we halted at a spring of pretty good water, about 4 miles short of it. There was scant room to pitch the tent, but my bed and table were levelled with stones,

* Cheer, or *Pinus longifolia*.

and I was soon quite snug. The Thermometer did not fall below 50° during the night, but it felt nevertheless very cold ; started at $\frac{1}{2}$ past 7 of the 6th, and reached Namgialaehi viâ Silukfoke at 11 A. M., distance 4 miles. The road from the Rungeet is generally rideable. The distance may be 12 miles. The whole tract is very poorly supplied with water ; there are but 3 streams I think altogether. A little repair to the road and alteration of the line in some places would render it a pleasant day's trip from Darjeeling. At Namgialaehi there is not much to be seen. The encamping ground is overrun with high wormwood jungle. The top of Silukfoke however is well worth visiting. It is the round green knoll commonly called Namgialaehi at Darjeeling, and very conspicuous from its smooth grassy look. The Lama of Namchhi, (abbreviation for Namgialaehi,) was waiting for me where the road turns off to his house, and accompanied me to the top. I reckon it to be 500 feet lower than Darjeeling. It is a very sacred peak, and like Kunchinjinga, is probably reckoned so because it is not fit for the plough or spade. There is no water for irrigation, and the soil is so dry and barren that it is not fit for crops of any sort. It is an open, and very level expanse of 20 acres or so, all under a coarse sort of grass. The view is very fine in all directions ; the valley of the Rungeet apparently, right up to the snow, Singalelah, Phugloot, Tonglo, and the crest of Sinehul to the westward,—Sandoopchi, Tendong, Numdoomrum, Sankarjong and Lakharry to the eastward, and Darjeeling, with the Jilla Pahar, Tugvor, and Lebong offshoots, is an exceedingly pretty landscape to the west ; Kunchinjinga was not out ; but I have noted a bearing of the snowy peak, "D 2" of Waugh's Chart, as well as bearings of the hills to the west and east. Numdoomrum is a level saddle, running north and south and connecting Sandoopchi on the north with Lingdam to the south, Sankarjong is the southern continuation of Tendong, and is a very red wall-like ridge visible from the Darjeeling hill ; Lakharry is a rugged and higher peak which terminates Sankarjong to the south ; both overhang the Teesta, which runs east of them. The "Manpeen" stream rises from Sandoopchi, and after receiving a tributary which rises at Numdoomrum, runs westerly to fall into the Rungeet a mile below the eave bridge ; Manbroo is the ridge stretching from Tendong to the N. W., and its highest point is named Tingbi. I walked out at Namgialaehi in the evening and had a fine prospect of the country

to the N. and N. West, the monastery of Pemiongehi, the ridge of Rinehimpoong, with the valleys of the Kullait, Roho, Ratong and Rumman. The Kullait, rising in Singalelah, runs in an easterly direction to the great Rungeet, and south of the Pemiongehi ridge. The Roho, nearly parallel, runs south of Rinehimpoong. I have noted bearings of these places. The only cultivation at Namgialachi is wheat, which is just now springing above ground. The Meboo, or local officer of the Raja stationed here, and 8 or 10 other Bhotiah families have rather extensive fields well tilled and fenced in round their respective houses, which are of wood on raised posts and thatched with split bamboo. The land is fertile. A light loam, and with manure of cow-dung, yields an annual crop of wheat; rice is grown a little lower down. There are some good turnips here, and the light yellow hill plantain ripens also. A plant named "Moon," the grain of which is like millet, is grown for the oil of its seed. The whole of the cultivated ground is overrun with rank wormwood. The Meboo Lama, and others, have fine herds of cows, and butter is procurable at 3 seers, (6 lbs.) per rupee. A little rice is also procurable from the neighbouring hamlets at 18 seers per rupee. I heard nothing of the Raja's officers all day, nor did any of them come near me. As they had stopped my advanced supplies here for 6 days, thereby putting me to heavy charges for the hire of 40 coolies who are setting idle, and had thus done my journey all the harm in their power, I had no wish to have more to do with them. After dark they sent to say they would visit me, but I declined on account of the lateness of the hour, and as they had left me all day to shift for myself, I preferred doing so for the night also. If an answer to my letter to the Raja announcing my visit had reached them, it would have been announced. From them therefore I anticipated no offers of civility, and I avoided proffered incivility, with a good excuse for putting off their visit.

The Lama of Silukfoke is the most polite man I have yet met with, although I have fallen in with but one saucy fellow; and more than a hundred Sikimites met us yesterday en route to Darjeeling. A string of 50 stout Meelies returning from Namgialachi having deposited loads of rice, sugar, tabacco, and other produce of the Morung there in transit to the Raja; and about 20 or more Lepelias loaded with oranges from Temi Burmeok and other places near the Teesta, proceeding to Darjeel-

ing, formed the bulk of them. The encounter with the saucy fellow was as follows. He was a young Bhotia of jaunty air, and considerable pretension. We met in a very narrow path, I was at the head of my long line of companions, he was heading half a dozen of his ; a few paces behind me was my Lepcha interpreter. The gentleman brushed past me rather rudely, and with hat in hand made a very low obeisance to the interpreter. "That is my servant," I said, pointing to the interpreter ; "am I no one, and who are you to behave so rudely?" He became flurried, and said ; "I did not see you." "You see me now, and my servant has told you, who I am, I expect you in common courtesy to salute me as well as my follower ; it is the habit of all the world for men to interchange salutations when they meet in this way, and not pass like pigs or horses. Is it not so?" He agreed, and blushing deeply, while his companions laughed heartily at him, he salaamed ; and then we chatted amicably altogether. His manners were probably borrowed from the Sikim officials ; and theirs to European gentlemen are very indifferent, otherwise I could not have pained myself as I did by this shew of exigency.* Now to the civil Lama of Silukfoke. He is as fat as Falstaff, and puffed most effectually as he followed my long strides up the mountain. We passed his house soon after he met us, and as I halted to look at it, he sent a messenger within who speedily re-appeared with two Choongas of fresh Murwa Beer, each rolled up in a clean piece of new American sheeting, and followed by a boy carrying two drinking reeds with the mouth-pieces rolled up in bits of fresh plantain leaf, I was presented with one, and the Kaji, my interpreter with the other. I drank to our host, and found the beverage far from bad. The Lama was communicative on all subjects, without any restraint, and on our return from the top of the hill he took me to his house, and I sat half an hour with him in his study, where his books and professional paraphernalia made a very respectable appearance. On the shelves was one religious work just received from Thibet, of which I have a half promise, "The Bhoom," in 12 large volumes. Then there was the large double-headed drum, like two Tambourines joined together, with a long handle to it ; a couple of bells ; a couch of two human thigh-bones

* P. S. This was the first and the last rudeness I met with during my trip, and I have no doubt that my notice of it reached the Durbar, and brought about the non-repetition of it.

rolled round with brass wire, and trumpet ended with brass used for calling to prayers. A bamboo quiver for holding the little rods of spikenard used as incense ; some flowers fresh laid on the table, and a bottle of milk. As we entered the sanctum a young and blooming woman slipped out past us. Mayhap the flower girl of His Holiness. Silukfoke is infested with leopards or lynxes, who often carry off the Lama's young pigs and goats. His cows are numerous and healthy. I asked him about the murrain which is occasionally so fatal at Darjeeling, and is raging there now. He knew of it, and attributes its spread to the cows grazing where people urinate, who have eaten of the flesh of animals dead of the disease.

A party of Thibetans has arrived here to-day en route to Darjeeling, and the Titalya Fair. They have 30 baggage sheep and goats, and with 20 women, children of all ages, and as many men, they form the dirtiest Kafila I ever set eyes on. They make their way by begging, and have a good deal of merchandise in musk, chowrees, salt, blankets, turquoise and striped woollens. There is the ruin of a monastery here of some size. It is of stone, very well built, without mortar, three storied, 75 feet long by 33, with narrow Gothic arched windows, and divided into one large centre and two smaller end apartments. No one can tell how long it has been abandoned, or when it was built. Probably the Goorka conquest of Sikkim was the date of the former. There is a row of barberry trees round it, and some pink-flowered Cinehoua trees, Sunbrung Koong, near at hand. The present Goomba is a stone building not half the size of the old one, badly built and disproportioned. It is more like a lime-kiln than a monastery, and has an ugly grass thatch roof withal. The ruin reminds me greatly of the Old Roman Catholic Churches in the Highlands of Scotland, which have been converted into places of burial by the Protestants, who, it would appear, from their abandoning them as places of worship for the living, were still tolerant enough to retain them for the use of the dead.

The prettiest thing at Namgialachi is a long solid stone edifice on the road, with a pathway on either side of it. It is called a "Muudong." It is 64 feet long by 10 or 12 broad, and 16 high. It is a solid stone edifice, covered with engraved slabs, which are let into it. Most of these slabs have merely the "Om, mane paime, Om," in the Thibetan charac-

ter on them. The others have various texts from the Thibetan scriptures. On the flat top of the "Mundong" are five little Chaityas, of the usual round shape; at the east end of it are two large Chaityas, and at the south another.

So much for Namgialachi, which I purpose quitting to-morrow, and which has turned out to be of greater interest than I had anticipated.

Temi, December 7th.—Started from Namgialachi at 6 A. M., and having gone over the top of Tendong and descended to the Temi road on the N. W. face of the mountain, arrived here at 4 P. M. I reckon the distance by the regular road 12 to 14 miles. It is passable for ponies, and one half of it may be ridden over easily enough.

Two hours and a half of steep ascent brought us to the top of Sundoopchi. This peak overhangs Namgialachi. The whole way is finely wooded; near the summit oaks, five species, are abundant. From this the road runs along the ridge which connects Sundoopchi with Tendong, it is an avenue of fine trees all the way to "Lamchook," and may be 4 miles long; total distance from Namchi about 6 miles. About half way between Sundoopchi and Lamchook there is an immense mass of quartz, about 30 feet high and twice that length. Its shelter is used as a resting place, and called a "Lahup," or cave; a mile nearer Lamchook there is a fine flat spot on the ridge with water close by, and well suited for encamping on. It is named Baktchin.

At Lamchook, which the term implies, two roads diverge. That to the left is the high road to Temi, the other leads right up Tendong and over its summit to Burmeok, the residence of a Kaji, and above the Tuksmapoo, or Tuk ghat of the Teesta.

The top of Tendong, 8600 feet, is a spacious flat 100 yards square or more, with fine swelling shoulders on all sides. There is a stone Chaitya in the centre, about 20 feet high, and some remains of a Goomba which was commenced a few years ago, but sunk in its foundations. A Lama is stationed here for two months during the rains to perform religious exercises. There is a spring of excellent water near the top, and the forest, which is gigantic, is almost entirely composed of oaks, and 3 species of Rhododendron, viz: the scarlet, the large and the smaller white. I have collected a large quantity of the seed of the two last in fine order. The other striking plants are the Hally, a Penax, with large plumes of purple seeds, Hypericum, the large-flowered species of a small

plant covering the ground with scarlet berries, and raspberries. Descending on the north side of the mountain, which is quite precipitous and rocky, yet bearing gigantic oaks and Rhododendrons we reached the Temi road in half an hour. I never travelled on a steeper path ; it is what the Yankees call Slantindicular, i. e. more than perpendicular ! My knees will ache for a fortnight, whenever I think of it. After joining the Temi road we came on a portion of it roughly flagged with stone. This was pointed out as the work of the Bhootanese, who it appears made an inroad into Sikim as far west as the old Durbar, before they were repulsed. This was in the time of the present Raja's grandfather.

At "Atooknot," 8 or 9 miles from Namehi, a road goes off to the left leading to Daling Goomba, and Yangang, and a little further on the descent begins which continues to Temi, it took us upwards of 2 hours and a half without any halts, direction easterly. I never saw a nobler forest than it is all the way from Lamchook. The chestnuts and oaks of great girth and shaft, are finer than anywhere I have been yet ; I measured the former to 26 feet in circumference, and the latter to 22 feet.

From a knoll above the station of Temi I had an extensive prospect, although the snowy mountains were not visible. The Teesta running southerly, and I reckon 4000 feet below us, is a fine stream even at this distance.

The valley of it appears to stretch N. 29° E. right up to the snow,* with numerous spurs from lofty mountains on either side running down to it. On the west the peak of Mainomchoo, bearing N. to W. is the most conspicuous to the N. E. and forming the opposite bank to this is Badong (A.) Further to the east is the Goomba of Rumtik, brilliantly white in contrast with the wooded ridge it stands on. It is 2 journeys from this across the Teesta, and on the N. bank of the Rungbo river. To the east is another Badong, a fine mountain, probably 7000 feet high ; also across the Teesta, and to the south east is Burmeok the residence of a Kaji, and a spur from Tendoug.

Tendong, elevation 8660 feet, as it is the most remarkable feature in the country between the Rungeet and the Teesta, on account of its eleva-

* See Journal of Dec. 12. This is the Rungmo or Rungmon feeder, rising in Kali Kongri, that bears N. E. from Temi.

tion, and rounded form, is also remarkable as the centre of a number of prominent spurs and ridges.

To the south it throws off Sankarjong and Lakharry; to the west Sundoopchi and the Namgialachi ridge, which connects it with Silukfoke to the N. W. and N. Manbroo, and Atooknot to the S. E. the spur of Burmeok. The whole of this extensive tract is, I think, remarkable for scarcity of water at high elevations. Certainly so as compared with the Sinchul or Darjeeling division of Sikim. The road travelled to-day, not including my topping of Tendong is nowhere, I think, of a higher elevation than 7000 feet, yet in 12 or 14 miles there are, but two springs of water, i. e. at Bakchin and Atooknot, and they are some way below it. On the Auckland road, Darjeeling, 6900 feet, which runs for 3 miles round the west of the Jilla Pahar, which is only 7600 feet; there are at least half a dozen of springs, and all of them rising well above the road. Tendong has the rock cropping out freely on the N. and west faces indeed it is very rocky, whereas the Jilla Pahar is on its N. and W. sides covered with deep soil, and hence perhaps the difference. The same peculiarities as contrasted with the Tendong region apply to Sinchul. From Atooknot to Temi, direction E., the soil is rather stiff, reddish and clayey. Temi is the station of a Phipun; he is subordinate to Mahapun Kada, who manages the country between the Teesta and Namchí, exclusive of Burmeok, which is under the Kaji of that name.

We heard to-day that they have had great doings lately at the Raja's on the occasion of his eldest son's marriage. The bride is a Thibetan lady, fresh imported for the occasion. Her relations have accompanied her to the Durbar to grace the bridal ceremony with their presence, and to carry back the remainder of the endowment money, (Vulgo, purchase money.)

In 1841 the second son, and heir-apparent of the Raja, died without issue. The eldest, Tubgain Lama, was the high priest,—head Lama of the kingdom,—and bound to celibacy, so that there was no presumptive heir except a boy of illegitimate birth, the nephew of Dunia Namgay, now the chief minister. It was first recommended that the Raja should take unto himself a young wife in the hope of raising an heir to his house, and he did so: but to no avail. Then it was tried to procure the recognized succession for the illegitimate son, but this has failed

also ; almost all the chiefs of the country, the priesthood generally, and the people, as far as they care at all about the matter, were strongly in favor of Tubgain Lama's succession, and they carried the point, he being nothing loath ; but he required a dispensation from the Pope at Lassa to enable him to resume secular pursuits, and to marry. This was sometime ago obtained, and the marriage is the first result.

There was great feasting, and some rejoicing ; all the chiefs of fitting degree, amounting it is said to 150, were entertained by the Raja for 18 days, the proper period, from the Royal Kitchen, and served in a large hall ; the chief minister, and the Lama of Pemiongchi presiding.

As I was starting this morning the Meboo* of Namchi, came with a letter to me from the Raja, which he said he had received during the night, and that it was the Raja's wish that I should stay at Namchi for sometime, or go on to Burmeok, one march, and stay there. Thus advised of the probable contents of the letter, I told the Mcboo I would take it on with me to Temi, and read it there, and as some of my people had started on that road, I should do so too rather than go by Burmeok. I was lead to this by a feeling amounting almost to certainty that it was a plan to delay me, and it has so turned out, for I hear that two officers are gone from the Durbar to that place to meet me, and endeavour to put obstacles in the way of my journey. Under what pretext, I do not know, nor do I desire the knowledge. I bade good bye to the Meboo, and gave $\frac{1}{4}$ and $\frac{1}{2}$ anna pieces to some old women and children, who brought me eggs, fowls, and some rice.

Namphok right bank of Teesta, 8th December.—Was up, and dressed before sunrise, and if not rewarded for my vigilance by any new and grander view of the snows, I was so fully by the prospect up the valley of the Teesta, and by the gradual illumination of the snowy peaks at its source.† An hour later, and from a point above and another below Temi, I had a fine view of Kunchin-jinga, and of a peak which is not visible from Darjeeling. It is E. of the highest points of Kunchin, and appears to be behind it. It may be Biddulph's Pundeem, which was seen from Changachiling, and which is not Waugh's peak of that name. The mountain of Mainomchoo shuts out the full view to the base of the E. faces of the Kunchin

* Officer of Police.

† See entries in this journal of the 12th, for these peaks.

peaks. The prospect thence must be superb, and I hope to live to see it. That, and a clear day on Tendong, would satisfy me for a long time to come. I am now on the best road to Mainomchoo, which is reached via Yangang Goomba, close above this.*

From Temi the descent of yesterday is continued, and very steep the whole way to the Rungni, which is the first western feeder of the Teesta met with on this route. It is 4 hours' work. The direction as far as Turke is northerly, thence it runs north and parallel with the Teesta, descending steeply to near the junction of the Rungni with the Teesta. Cross Rungni to Beng, and in a northerly direction close to Teesta you have a beautiful level ride of a mile through an open forest of Toon, and other tropical trees, to the Rungpo, a second western feeder of the Teesta. This is a deep, and brawling stream, and crossed on a bundle of long bamboos with a rail to hold by.

From the Rungpo to this place there is a short steep ascent, and bad road to the Yangang spur—direction north. The Teesta is close below us, bright green, and very noisy. Orange groves are abundant in the Teesta valley; principally close to the river, and two species of oak are most abundant here, and all the way from the Rungni. One of them is now in flower; Pooah abounds; but not a tree, (Fern) since we left Lebong. Elevation I reckon *not* 1,000 feet above the river. The Rungni falls into the Teesta at its bend to the eastward round Badong. Temperature of air at Rungni 11 A. M. 66°. Temperature of the stream 61°.

The following are the ghats, (Ferries)—of the Teesta, from the south :—

1. Katong Sampoo, (for Chadam road.)
2. Rushap, a little above the former.
3. Tuk-Sampoo, (for Burmeok, and Temi road to Tumlong and Chola.)
4. Lingjoo, just below Temi.
5. Bangsong, (for Temi road to Tumlong, the Raja's residence.)
6. Balla Samdong, below Gorh.

At the Rungpo, I was met by the Lassoo Kaji, and the Lama of Pemiongchi. They were ordered by the Raja to come so far to meet me, and accompany me onwards; but I had come upon them rather

* See further on for visit to Mainomchoo.

snddenly, as it was intended I shonld travel by the Bnrmeok ronte to the Took ghat of the Teesta, where the Dewan would probably mcet me. The Kaji pressed me to halt for the day, and he had prepared sheds for me ; bnt I find the Raja's officers manifest such an anxiety to delay me, that although I cannot clearly see the reason, I am quite satisfied it is for some tricky end that wold not serve my objects in desiring to see the Raja, and I am therefore resolved not to delay nntil I am shewn some good cause for slackening my pace. Innnmerable excuses are made about the bad state of the road, the propriety of mending them for me ; and that this would have been done had more time been given, and indeed now it would be done if I wold only halt a day or two, &c. &c. This road excuse is an unlucky one. It would take years, not to talk of days, to improve them. I therefore put the Kaji off by telling him that we were all hylanders, that the state of the roads was a matter of moonshine to us, bnt the provisions were a great thing. If he wold furnish them it would be acceptable, bnt that I had nevertheless a good snpply of my own for the present, and would take my chance of the road and proceed : I did so, and he came with me evidently vexed, but very civil. The Bnrmeok Kaji has sent me a very kind and friendly message, with oranges, rice, a kid, fowl, milk, eggs, and bntter. He wold come all the way nearly, 15 miles, to see me, bnt was ill ; he was very glad indeed I had come this way ; he was an old friend of mine ; hc and his father were old friends of my government, and above all he hoped to see me on my return, and would make a point of doing so whatever road I took. This is all very well ; I have been exchanging civilities with the old gentleman for the last 10 years by long shots of sweet words, and small presents between his place and Darjeeling, and shall be right glad to find him hospitable in his own country. There is no part of the world I know of in which civil messages are better concocted than in Sikim, and pretty well for this in Bootan too. They always begin by a reference to the antiquity of the alliance between the raja and Chiefs of Sikim, and the Company ; its closeness and dnrability is then tonched upon, and its perpetuity insisted on. Yet not one Bhotia chief of Sikim, or Bootan, that I know of can pass a word on which I wold put the least dependence away from sight, or easy reach. They have negative qnalities of some use to their neighbours ; they are not brave

or adventurous, but the reverse ; they shrink from violent measures, and I believe, that however much they might bluster to deter a solitary European unattended and unprotected, from travelling about the country, his person would be perfectly safe and inviolate. This relates to Sikkim, and is a good deal. To me they are all perfectly polite and very well bred at present.

Bansong Ghat, on the west bank of the Teesta River 9th December. —A very heavy march for loaded coolies and not an easy one by any means for the traveller. The road runs all the way along the west bank of the river over spurs, and across streams ; the general line of it varying, I think or rather guess, from 1 to 3000 feet above it. We started soon after day-light, and it was after 3 p. m., when the rear guard came in. I adopt a very useful plan—Naik and 4 Sepoys go with the fastest travelling coolies, and the Havildar with 4 more comes in with the last men. No deviation from this is admitted. Shortly after starting we crossed the Namfoke feeder of the Teesta ; its course is due east to the river, and about a mile or more further on we came suddenly on a very grand, and also a most delightful prospect. It is the basin-like valley of the Rungoom, a large and very rapid feeder of the Teesta. I wish I could describe the impression it made upon me as I first surveyed it : and it is not a whit less beautiful throughout its 3 sided circuit. On the North W. of it are the two peaks of Mainom-choo, 11,000 feet, their sides of bare brown rock, the ridges having numerous spikes of rock also. Forming the W. and S. W. margin of the basin is “Yangang,” which was above our stage of yesterday. The bottom of the basin is a mass of the richest foliage, through which 3 or 4 perpendicular masses of rock protrude themselves. Mainom is the first bare rocky-peaked mountain I have seen in Sikkim. The effect of this solitary change of character in the scenery is very striking.

The view of Rungoom alone is well worth the pains of the journey from Darjeeling.

At the north margin of Rungoom our road is joined by one to “Yangang,” which leads via Daling Goomba to Islimbo, and also to old Sikkim. Although many of the trees in the Teesta valley are of immense size, one we passed to-day surpassed them all. It measured 45 feet round, inclusive of 2 not large buttresses. It must be 35 feet round the solid stem.

At $\frac{1}{2}$ past 9 reached "Nch;" the last part of the ascent to the ridge of this spur is excessively steep, and the path is overhung by a precipice as steep as the one on its lower side. The top of this pass is celebrated as the place whence the Goorkhas were driven back in their conquest of Sikim to the Teesta.

The Sikimites made a gallant stand here, rolled stones, and flew volleys of poisoned arrows at the enemy and succeeded in driving them back to Brom, which was the furthest point on the Teesta attained by them, and they never crossed it. It is 61 years since this event, i. e. it occurred in A. D. 1787.

The father of my interpreter, who for the remainder of this trip will be called "the Kaji," commanded the Sikimites on that occasion, and his son, although by no means disposed to be a warrior, is very proud of it, and well he may be. The annals of Sikim have no doubt their Wallaces and Brucees, if one could get at them. There is a Men-dong at Neh, smaller than the Namchi one, and an upright stone against which travellers measure themselves and cut their mark on its edge; I overtopped all the marks by a very long chalk; at least 6 inches.

The maximum stature in Sikim does not exceed 5 feet 7. From Neh there is an easy descent to the Sungkoom, a feeder of the Teesta from the west, and after crossing a narrow spur the road descends to, and crosses the Mungshing. At $\frac{1}{2}$ past 11 I had headed the line a good way, reached Turboling, from which there was a fine view up the Teesta terminated by snowy peaks; crossed the Runnett at $\frac{1}{2}$ past 12, a rapid and large feeder of the Teesta; and arrived at this ground, Bangsong, soon after.*

The Teesta has a cane suspension bridge over it here; it is a good deal larger than the Rungeet, beautifully green but turbid and not very violently rapid. Its roar however is somewhat deafening, as I now write, and have to shout to my people instead of speaking. Water

* I pushed on ahead of my people in the hope of getting across the Teesta and on to the Durbar before the Dewan arrived at the ghat, to perplex, delay and thwart my purposes, as I expected he would; but he was there before me, although he concealed himself; and when I came to the cane bridge I found its end fastenings loosened, so that an attempt to cross on it would have been certain death; I then went on to the Ferry, and here I found the raft moored on the other side.

boils at 209°. Temperature of the river 52°, at 3 and 5, p. m. Of the air in the shade at the same hours 70° and 62°. Thermometer without, black bulb in the sun at 3 p. m. 80°.

Last night at Lamfoke I had a long visit from my Mehmandar, the Lassoo Kaji. It was all directed on his part to induce me to halt and delay, to give the Dewan time to prepare for my reception on the Teesta; but I replied to all his solicitude that I should be perfectly content to meet the Dewan in any way and at any place on the road the Durbar that might happen; I find that the routes I compiled for Hooker are wonderfully correct considering all things.* It appears that there is a lake of some magnitude on the road to Chola, and not far from that pass. Its water runs to the Teesta. There is also a lake near the Natolah Pass, and it is the source of the Natolah river, which forms the upper boundary between Sikim and Bootan.

At daylight this morning as I was leaving Namfoke I had a visit from the Lassoo Kaji, and the old Lama of Pemiongchi, a very picturesque old fellow, with a red mitre-shaped cap, red robe with yellow satin collar, and a long staff in his hand. Another wish to make me halt, although half my things had started, but of course that would not suit me. They then presented me on the part of the Raja with a bull, a large quantity of oranges, rice, turnips, bhangans, and millet for beer. The oranges were distributed forthwith, and my fellows sucked them all the day. It is the height of the season for this fruit, and it must be very plentiful in this valley. All the people we meet are eating or carrying them; and they offer me some to eat, as I come along,—at least the Lepchas do. They are fine cheerful people, and well disposed to Europeans. I am improving my colloquial in their language. The Lassoo is of this tribe. He does not speak Hindustani or Parbuttia, and is much pleased, amused—at my efforts. The index to peoples' hearts in the east is certainly through their languages. The coolies were cheered as we came along with my promise to slaughter the Raja's bull at the next ground, and it was done accordingly. The beast was tame enough after his journey, and made no objections to being tied to a stake; I put a pistol to his forehead, he came down at once, and then we had my cook, a Muhammedan, to cut his throat with prayers, so that the flesh was good for all hands.

* See *Journal As. Soc. for November 1848*, for these routes and this pass.

The Lepchas minutely examined the pistol, which takes but a pea ball, then the beast's forehead, into which they poked a slip of bamboo, and putting cause and effect together, unanimously agreed that this was the best possible mode of slaughtering.

They are very clumsy at this sort of work* with pigs and bullocks, they drive them mad with arrows, and when they are weak from hemorrhage, they hamstring them.† We have two cases of fever to-day. The Namfoke portion of the Teesta valley is notoriously malarious in the hot weather. I hope it is not so now.

There is a pretty little orange grove belonging to the Raja a little way from my tent, and a pine apple garden at one side of it, with a pomgranate tree in flower in the centre of it.

The orange trees are planted in clumps of 8 or 10, and are large and fine ; north of this, in the Teesta valley, the fruit is said to be inferior to what it is southwards. “Wherever the flooded rice grows, there oranges will flourish.”

10th.—Halt here for to-day. The Dewan of the Raja with two other chiefs arrived on the opposite side of the river past evening, and this morning the Dewan and I exchanged salaams across the ferry. He shot an arrow with a letter across to say that he hoped to come over to visit me during the day. He was attended by a retinue of about 50 men dressed in long loose scarlet jackets, striped cloth robes to the knees, conical caps of coloured cane work, with peacock feathers in front, bows in their hands and quivers at their backs. The chief was dressed in a light blue silk bukoo-wrapper, reaching to his ankles, a yellow sash

* This pistol, the barrel of which is a portion of an American pea rifle of very heavy metal, and small bore, caused a great sensation, and the greatest envy among the Sirdars. The Raja's son and the Dewan both tried every means of getting it from me. The Dewan declared that with such a “multum in parvo” he should feel his life safe anywhere, and he entreated of me, as I would not sell it to him, to get him a similar one at any price.

† The appropriation of the bull's carcase was rather amusing. I had bespoken a couple of the marrow-bones only for soup, and my man disjointed them as soon as the legs were skinned. The Lepchas I observed preferred the ribs to any thing else. The Moormies, I fancied, looked mostly to rump steaks ; and the Bhotiahs without doubt affected the tripe, and other offal. Not a bit of the beast was left in 20 minutes except the horns. The Bhotiahs actually divided the skin, and ate it.

and blaek velvet eap. With the Teesta rolling in front, and the almost preeipitous side of the Kumbulpoong mountain, wooded to its summit in the baekground, the effeet was highly pleasing, if not grand. A hundred yards or so below the ferry is the eane bridge of which, and the land beyond, an artist would make a fine piture. The river takes a bend at the bridge, and this brings a low wooded spur of the opposite bank quite aeross it; over this spur, and in the distanee to the S. E. is the Badong mountain, a fine mass of 6000 feet high at least.

On the opposite bank of Kumbulpoong, there is a spike of roek apparently 50 feet high. It is regarded as a natural Chaitia, and reverened aecordingly.

Hot to-day in my small tent, whieh is not shaded. Thermometer at 1 P. M. 72°.

Kedong, west bank of the Teesta, 11th.—The Dewan not having eome aeross to see me by noon as he promised, and having no intention of doing so at all that day, as I had good eause to believe, I made up my mind to have him over in the speediest manner I could think of, and that was to announee my purpose of quitting the ghat on a trip northwards, until the arrangements for taking me aeross the river in progress to the Durbar should be completed. I announee this to Lassoo Kaji, and he made some objections to it, but said he would report to the Dewan.

The Dewan did not wish me to move for a number of insignieant reasons; and I believe that he and the Lassoo kept up a eorrespondenee about it, shot aeross with arrows, all the afternoon. In the meantime I went on with my arrangements to start on the Laehoong road at daylight, and merely asked the Lassoo to give me a guide, who knew the road. When I went to bed he had not promised this or refused it. At daylight, when I was all ready to start, I was informed that the suspension bridge had been put to rights during the night, that the Dewan would be over immediately to see me; and that it was supposed I would then wait, where I was. I breakfasted then, struck my tent, gave the word to be off to the eoolies, and then sure enough, the Dewan did eome. I reeeived him as I was, and we sat on the Sitringee of the little tent, whieh was still spread. Then eame a host of enquires about my journey, whieh had been so rapid and unexpeeted, a number of excuses for not ferrying me yesterday; a great deal

about giving me a proper reception at the Durbar, and many professions of friendship, beginning as usual with the "ancient alliance," and ending with the unalterable nature of it for the future. I was most amiable and acquiescent in all this, and to the expressed anxiety about my reception, I merely said that whatever the Maharaja might think worthy of himself on the occasion would be quite satisfactory to me. It was then agreed that as it would be necessary, according to the Dewan, to refer to the Raja before I went to see His Highness, and as this would take some days, I should go on a trip to the north along the Teesta, and return whenever the Dewan should send after me to say that the preparations for crossing the river were completed. He then appointed three men to accompany me as guides and cicerones, and I started, the Dewan coming with me as far as the Raja's orange garden, where he had a basket full plucked and presented to me.

We talked of shooting hare, when the Dewan gave me a broad hint for a gun. He examined mine, a borrowed one by the way, and also a pair of pistols, with which he made me show off my firing at a mark, and then tried it himself. We parted in mutual good humour : at least I was very well pleased to get away from the ghat for further travel, and he said he was well pleased at meeting me. I have not the smallest dependence on any thing he said. He is the most deceptive, and lying, of all the faithless Sikim chiefs and officials. He will mar my purposed visit to the Raja if he can.

We started at $\frac{1}{2}$ past 8 A. M. and arrived at Kedong at 2 o'clock ; all hands up and fairly tired. It is the severest march I have yet made in the hills, although far from being the longest. The general direction is north.

We came principally in the bed of the Teesta to the junction of the Romphup, a western feeder running due east. This took us an hour. Then up the bed of this stream for a mile or so, crossed it over on bamboos, and commenced the ascent of Lingkeang, a shoulder of Sungdampoong, which we attained after 3 hours and half hard work ; it is almost perpendicular ; the road, so to call it, is the very narrowest, and in many places it is rather alarming from the immense dip of rock on the lower side. In many of the narrowest places a slip would be inevitably fatal. No ponies to-day ; left them at the ghat, and it is well, I did so ; and none of the coolies carry more than 20 seers, which is just the load for easy and fast travelling.

From the crest of Lingkeang the view is very grand. To the north is still Sungdam, rugged, precipitously steep, and barren. The character of the country is evidently changing, and the first sign of it was in the peaks of Mainom, overhanging the beautiful basin of Rungoom. Instead of well soil-clad mountains, as at Temi, and further west, rockiness and scanty soil, with constant precipices, is now the character of the Teesta valley, and more so on the west than east bank certainly; at elevations above 5,000 feet there is scarcely any thing but rock, whitish clay slate, and gueiss. I have noted bearings from Lingkeang to the N. and S., "Sikim" to the south, and on this side of the Teesta, is the largest piece of cultivation we have seen. The fields are well railed in, and the ground turned up with the spade ready for wheat, which will be sown next month. This is full two months later than west of the Rungeet. The harvest it is said will be in May, as there. The vegetation on Lingkeang is not altered I think from that of similar elevations further S. and W. but about this place (Kedong) there is grass, whenever there are bits of soil for it to grow on,—and that is rare. We passed an old Lepcha, who looked half starved, and was turning up the scanty soil for a buckwheat crop. "Have you any cows, and can you give us a drop of milk," I said. "Cows!" was the reply, "there is nothing for them to live on here, it is all that the Thar and Ghoral* can do to get a subsistence." These are really the only animals known hereabouts, and *they* are very scarce, nor are there any birds; during the two days, I was at the ghat, I did not see a single bird; and there is said to be no fish. The fishes of the Teesta on the plain are the best river ones I know of. The Romphup water is a drumly white, and carries down a very fine white silt from its source, which we saw at a distance, and is in a hill of apparently clay slate. All the other feeders like the Teesta itself are green and clear, and this is its character on the plains, where its water is unrivalled for drinking. We had a good view of some snowy peaks before reaching this place, The Powhuuny of Waugh's chart I think. (See bearings.) We met a party of Thibetans going to Darjeeling; they were 10 days from Lachoong, which they assert to be to the east of the Lachen Pass. At Temi, we were told the contrary; and Hooker had a similar story told to him in Nipal.

* Antelopes.

This question may be settled a little further on. There is no doubt, I now think, that both these Passes are to the west of Waugh's Pow-hunny. There is a stream of good water at Kedoug, and just enough flattish ground to place my tent on ; around it are fine large rocks under which the Lepehas sleep.

"The Koor," "Borh," and "Oope Palms," are very abundant on the Lingkeang aseent. No tree ferns, Oaks, and birches at Kedong. Water boils at $200\frac{1}{2}^{\circ}$. Thermometer in shade at 2 P. M. 58° . Temperature of stream 54° .

Started at 7 A. M. and after hard work over such a road as I have only heard described, but never travelled on, halted here at noon. All hands np half an hour after, right glad to find that I had reached water, and did not purpose passing it to make a longer march. Gorrh is the usual halting place. We got there at 11 A. M. and the Raja's guides in attendance tried to dictate a halt to me there, on which account I mainly pnshed on to satisfy them that they were sent for my convenience, not for their's. They are very civil fellows on the whole, and do my biddiug cheerfully. If they tell a hnndred lies during the day, about the names of places, and other things which I have in my own knowledge, and by means of those who are with me, the power of correecting, it is the fault of their training, and I cannot help it. After an hour's walking with a good deal of ascent, and along a perfect precipice principally of solid rock, with loose stones here and there, we rounded the N. E. shonlder of Sungdam, and suddenly turning northwards, I was rewarded with a torrent of delightful emotions such as one but rarely experieuees, aud which form the sunny spots iu the book of life, when they do occur. When we started it was cloudy, and threatening rain ; sudden gusts of S. W. wind came violeutly up the course of the Teesta, and we were enveloped in dense mist. Despairing of seeing any thing for this day, and expectiong to have to return to-morrow to the Dewan and the chiefs at the ghat, I early rosolved to halt at Kedong. How glad I am that I did not, for on turning to the north the horizou was quite clear ahead, and displayed a noble view of the snowy mountains. The Teesta valley running due north, scineed to peuetrate deep into the range, which looked close to us, and semicireles of suowy mountaius flanked it on the east and west. It was more than beantiful, a fresh and bracing

breeze came blowing right in our faces, the nearer hills on either bank of the river rising from its bed from 6 to 7,000 feet, were bright in sunshine; all around was indisputably grand, and I was perfectly happy.

The road from Kedong to this shoulder of Sungdam, which is probably from 5 to 6,000 ft. high, runs mostly on a narrow ledge of rock, with the Teesta on the right, and perpendicularly below you; the peaks of Sungdam overhead and of bare rock, a variety of long grasses occupy the soily portions of the mountain side; and at the shoulder there are some stunted trees of the scarlet Rhododendron, Alders, and the handsome yellow Daphur now in full flower. The bark of this plant is as tough as that of the real paper plant;* but it is not used, I believe for that purpose. It abounds all the way to Tukbrum, where it is a good sized tree.

From Sungdam shoulder, the road descends very steeply to the Rett or Ronglo, a rapid stream running east to the Teesta, crosses it, and ascends precipitously to Gorrh, we come through barley and wheat fields just above ground, and then along more rocky precipices to this place. I believe that my route to Lachoong,† which gives the road as descending to the Teesta at Gorrh, is quite correct, but there is evidently a great jealousy with the Sikim officials of our crossing the Teesta, and as I satisfied myself at Gorrh, that the snow may be reached or nearly so by the left bank, I did not press hard questions about the ferry, and came on.

The Runkoom, an eastern feeder of the Teesta, joins it opposite the foot of the Sungdam shoulder; and the Rungmon from the E. by N. coming from the snowy peak, noted yesterday as Powhunny, joins it nearly at the same place. At Tukbrum is a feeder of the same name, which comes down in a eataraet over the rocky valley of its bed, and roars as loudly as the Teesta itself at Bangsong. On the east bank, and north of this is the Rhato; and from the west, and between Tukbrum and Rahlang Ghat, is the Nukdung, and some other feeders of which I have not the names. At Rahlang the Teesta takes a turn to the eastward, and it is the Rieng which comes due south from the snows, and appears to be the north source of the river. To the north-east of the junetion of the Rieng it is joined by the united streams of

* Daphne also.

† Jour. As. Soc. for November, 1848.

Lachoong and Lacheu ; to the N. and west of the latter of these, its own source is in the snows, and far east of Kunchinjinga.* I have made incessant enquiries as to the possibility of seeing Kunehinjinga from any of the mountain tops hereabouts, but it is universally said that it is not visible, that moutains partly snowed, and not snowed, intervene. The people at Tukbrum point a little S. of W. to the situation of Kunchinjinga.

The people hereabouts and onwards to the snow are Lepchas and Bhotials mixed ; all the way from Bangsong they look starved and miserable. No wonder ; it is a sterile land,—rice does not grow, and they live it out the best they can by bits of wheat, barley, murwa, and buckwheat cultivation among the endless rocks. On the east side of the Teesta it is better, and there are some nice looking farms occasionally seen from the river upwards to 5 or 6,000 feet. They are generally fenceed in, and are for the most part permanently cultivated ; the Lepchas not being so erratic on the Teesta as on the two Rungects, the Balasun, and Mechi. The manuring is done solely by penning the cows in different portions of the little farm. They rarely have pigs, and fowls even are scarce, goats unknown, and so are sheep. Darjeeling and its free expenditure of ready cash has wonderfully ameliorated the condition of the people who resort to it and live near it. This was well described to me yesterday as we came through a wretched field of buckwheat. "Here a man cannot exist unless he grows something, however bad, from barren soil ; at Darjeeling he can live well on good rice, and not cultivate at all. There, leaves, bamboos, rattans, and all sorts of yams, and vegetables will fetch him money. Here there is no money, and little to sell if there was ; so the people are starving ; grass is used for thatch hereabouts instead of bamboo." There is a Cartus tree here, the first ever seen by my Lepchas, and the first by me in Sikim, also some tobacco plants, but of no use.

Water boils at 204°. Temperature of air at 1 p. m. 60°; of water 56°.

* P. S. I leave this exactly as it was noted at the time, but when at Mainomchi with Dr. Hooker, I came to the conclusion that the feeder of the Teesta which I call the "Rieng" is the proper source of the Teesta. If Dr. Hooker succeeds in getting to the Lachen and Lachong passes, we shall have accurate information on the sources of the Teesta.

I have a letter from the chiefs at the ghat to say that the Raja has written, and wishing me to return, which I do to-morrow according to my promise. I wish they would keep their's to me in like manner.

Kedong, 13th.—Last night at Tukbrum at 9 o'clock the sky was lowering heavily, and threatened rain. The Thermometer stood at 54°; a great change at this elevation in 9 hours. But it had snowed heavily on the peaks to the northwards; was now bright and clear, and a gentle northerly breeze was blowing. I do not know if the proximity of Tukbrum to the snowy range at all affects the variations of its temperature, but the rapid descent of it last night is, I think, unusual. It was with great reluctance that I turned my back upon the snow, and even as I did so I was half irresolute, for yesterday I had encouraged dreams of further delays at the ghat, and of my reaching the snow, before the summons of recal should overtake me, but I could not help it; it is reported that the Raja has come in person to the river to meet me, and it would not do to keep the sovereignty of Sikim kicking his heels for me, in his own dominions. I wish most heartily that he had staid at home, and ordered me to the presence at Tumlong. Besides the pleasure of a couple more marches in new places, I might have got to the lakes of Chola, which are the newest of all the new things I have lately heard of. They lie, one on each side of the road near the Pass, and on this side of it, and two day's journey from the Durbar.

The road to-day seemed rather better than it was yesterday, and constant travelling over the like of it might reconcile you to it, and even lead you to defend it, as a thing you had a property in. This is a very common feeling with people in India about their stations, officers, &c. &c. But it was not a whit the less terrific along the face of Sung-dam. It is a mixed mood of elation and depression to find yourself for an hour together moving on a ledge of rock which is sometimes not more than 6 inches broad; a rocky wall of 1,000 feet over your head, and below another of 4 or 5,000, with the certain knowledge that a single slip would in a few seconds bring your earthly progress to a close for ever.

At the Ronglo stream we saw about a dozen large bee-hives on the face of an inaccessible precipice. There was a village near, but the people could not manage to get at them, as there was no tree above

the precipice to which they could attach a rope, and thereby descend to the hives, as is the fashion to do in like cases. These were the large black bees of Sikim, with a little yellow below the wings. They are called "Vott" by the Lepchas, "Piabeany" by the Bhotiahs. Their honey is pretty good; the quantity of wax they yield is very large. The small bee of these hills is like the English one. The Lepchas call it "Hoo," the Bhotiahs "Seviang." Its honey is very fine,—its wax very little. The honey of both species is intoxicating while the white Rhododendron is in flower, and they feed on it, i. e. in April and May. The Pupa of both, as well as of a very large black hornet with yellow head, are much prized as a delicacy in Sikim.

Bangsong, on the Teesta, 14th.—We arrived here from Kedong at 11 A. M., having started at $\frac{1}{2}$ past 7. It was very pleasant to tread the bit of level road near the ghat, after 4 days of incessant climbing and descending, not to speak of sleeping off the level; for the Machan is always higher at one end, and mine on this occasion had by no means an even surface, being made of sticks instead of bamboos. I have pitched my little camp in the Raja's orange grove, and cleared the jungle that shut out the view of the river. It is a fine spot of 2 acres, or so, quite level; the river rolling in front, and Sungdam rising precipitously behind it to 6,000 feet at least. On my arrival the Dewan met me, and took me to the house he has fitted up for his quarters. His reception was polite, and almost kind. His enquiries about my trip very amusing. Why or wherefore I went such a road without direct necessity he could not yet understand; nor could he at all sympathise with me in my expression of pleasure at what I saw. The end of the house was fitted with a bench raised about a foot, on which was spread a rug of soft carpetting, blue and white, and of Chinese or Thibetau manufacture. On this he insisted I should sit alone, he taking another carpet on my right hand, and some paces down the room. Between us on the floor were his devotional implements, and on the bench beside him a Thibetan dagger with silver handle, and an English pistol. The walls were hung round with white and coloured furs and sheep skins, China satin bukoos, (cloaks), a shield, and 4 or 5 enormous Chiua hats of white straw, or mattiug, lined with blue silk and studded over with worked silk figures of butterflies, &c. About a dozen dirty brawny fellows in blue or purple long woollen wrappers, loitered out

and in the apartment, and two fat Lamas occasionally muttering prayers and counting their beads completed the group. My host's ponies—3 good ones,—were picketed close to the door. A high peaked tartar saddle, and a lower peaked Chinese one, lay in a corner of the room, and the whole menage had a much more Tartarian appearance than I have ever met within the hills. We talked on many subjects ; horses he is very partial to, and he drives a trade in them besides, between his own country and Darjeeling. He asked about our extraordinary anxiety to visit the snows, and other questions regarding the Himalaya, and was greatly astonished at learning that it extended from the Indus to the Burrampootur, and that we knew something about it throughout this immense tract. He made what I believe is a true remark, that this is the nearest way to Thibet from India. It was not from him I expected this corroboration of my own notions. After regaling myself with a good pull at a Choonga of quite cold Murwa beer, and some oranges, both of which were most grateful after the hot walk from Kedong, I took my leave. He visited me at my tent during the day, and we are very amicable. At his visit he said he would follow the fashion of Thibet, by presenting me on the first occasion with a tray of yams,* some dried plums, a side of yak beef, and two haunches of venison. That after the same fashion it was his duty, and he would like to provide my meals regularly as long as I staid with him, but that as he had come very hurriedly he could not do this ; but would request permission to send me such provisions as the country afforded. I replied, that he was unrivalled in these parts for his acquaintance with Thibetan manners and usages, which in the present case were very hospitable and agreeable. I shall probably have a much more respectable sort of offering during the day, or to-morrow, for these Sikimite officials are on all occasions pertinacious holders back in their civilities as in their official acts, opening out with extreme caution, and always with seeming reluctance, even when their politeness is, as in this case, quite voluntary. I am informed that the Raja is engaged in some unavoidable annual exercises of religion, which will occupy him till the

* This yam is like the radicles of a larger root, not thicker than a quill ; brown, and like Ipecacuan, crisp white, and sweet, and is eaten raw, as well as boiled. It is called "Somah ;" the plant is said to be a creeper, and not unlike the yam plant in Sikim.

new moon, (a fortnight,) and will write to ask me to meet him next cold weather. In the morning I heard that he was at the ghat waiting for me.

We shall see how it is to be arranged. Meantime as before, I believe nothing I hear regarding his movements or intentions.

Bangsong, 15th.—The Dewan and the Lassoo Kaji arranged with me, last night, that I should remain here for two days, in the course of which I should know exactly what the Raja was about. They know well enough, but will not say; and the Dewan's system of secrecy is so complete, that it is in vain to try among his people for correct information on the subject. I require a day's rest, and so do the coolies, who have been with me to Tukbrum; I also hear that Hooker has penetrated into Sikim, on his return from Walloongchong, and is making for me here. I should like exceedingly to have him here at all events, and if the Raja comes, it will be more of Sikim for him to see than he will again have any chance of. I am not obliged to be back to relieve Mr. Kemp, who is so kindly carrying on my office for me, till 25th, so that I shall wait with pleasure for the time specified. It rains to-day, and threatens a continuance, I fear, but as I have 40 Lepchas with me, we soon housed all our party. The plaintain leaf, *fresh*, is an excellent thatch, and it is very abundant here; so is the Oopi palm, which the ponies prefer to the bamboo, or any other leaf I think. At noon the Dewan called, and as I half expected, he came out stronger in the hospitable line than he did yesterday. He presented me on behalf of the Raja with a yak, two Thibet sheep, two loads of rice, two quarters of mutton sun-dried in Thibet, some Lassa Macaroni, milk, yams, a piece of yellow China satin, and a pair of Tartar boots, drab lined with pale blue. I gave his people, who brought the largess, 20 Rs. When he left me he said that the Raja was on his way here, and he actually went across the river to prepare shedding for his royal master. If this be true he must have known of it last night when he told me that all sorts of things would prevent the Raja from coming. First, there was the religious exercises. 2nd. His extreme old age, (he is 70.) 3rd. The road to this ghat is not fit for Doolie travelling. 4th. The time for preparation was so short. 5th. The Lassa people might be jealous, and alarmed at his coming to meet me, and prevent his going to Teshoo Loomboo next year. 6th. When he met Colonel

Lloyd at the Took Ghat, 12 years ago, the meeting took two years to arrange ; and, lastly,—yet I think that was the last reason,—the Bootanese may be jealous, and annoyed at his friendliness with me, and come down upon him for it accordingly.* Certainly this Dewan is the aptest story-teller I know of,—a pattern minister, I reckon, for a Bhotia Raja. His qualifications may get him promotion across the snows, and I hope he may get it soon. I think he is not likely to come by much honor in his connection with the British government ; as yet he has always done the reverse.† I am right glad for the sake of my temper, and patience that I am not entrusted with any special matter of business to be transacted on this occasion ; as it is, I can wait to see the end of his lies, and be none the worse. I have information however, which leads me to think that his position is just at present none of the easiest to maintain ; and is a precarious one for the future. He is not at all in favor with the lately married Lama, the Raja's eldest son, and who is now acknowledged by all the chiefs and people as the heir-apparent. If the old Raja dies before the son, farewell to the Dewanship of my hopeful host. He got his present influence over the Raja, through the ladies, one of them a relation of his wife's, and by alienating the Raja from his eldest son, to whom he has not even spoken for years. The marriage lately effected took place in spite of the Dewan, and was all arranged in Thibet by Aden Chiboo, his enemy, the right hand man of the heir-apparent, and the present destined Dewan for the new reign ; but he puts his trust in princes, and has a crafty fellow to deal with in the meantime, and that is the present minister, who is backed by the Raja, and all the female interest of the household, in his purpose of putting the illegitimate son on the throne at the death of his father,

* To all this, I replied, that I needed proof of the Raja's own inability or unwillingness to see me, and that I would wait for it at the Teesta, or go to the Durbar, if he would let the passage of the river be as free to me as it was to every one else.

Late at night he sent me a letter bearing the Raja's seal, and dated from the Durbar, in which he excused himself from seeing me ! I pronounced it to be none of the Raja's, and avowed my purpose of regarding it as a manufacture of the Dewan's until I had assurance from the Raja of the contrary. This resolve decided him on leaving matters alone, and he accordingly produced the Raja, who at the very time I got the letter had been two days en route to the ghat to see me. The purpose of the Dewan was to drive me away in anger at the Raja.

† See Review of Sikim Politics, Nov. 1846.

and thereby securing to himself the continuance of his ministry. These are all and singly even sufficient to keep a new man, who rules his fellows more by force of favoring circumstances than from superior talents, on the qui vive ; and doubtless my affairs, as they are not very pressing, are held inferior to any of his own. If furthering my wishes could materially serve his own purposes, I might through him accomplish something for the more satisfactory transaction of business with Sikim ; but it is not so ; and if I do not see the Raja, or seeing him, do not find that he is able or willing to amend matters, I must wait for some other opportunity or try some other mode of bringing this about. As it is, a great point has been lately gained in the permission to Dr. Hooker to return by Kunchinjinga, and by the facilities given to my own travelling in Sikim.

Bangsong, 16th.—Heavy rain all last night. The river has risen a little, and although its waters are still green they are turbid, and the pace is quickened. It is always a matter of deep interest to me to watch the endless current of a stream, however sluggish, to the insatiable ocean. But the headlong course of moutain torrents, equally unceasing, I can never look on without feelings of great wonder. How is the rate of these currents ascertained : I have never met with any observations to this end.

While waiting for breakfast this morning I saw the Dewan, whose house is close by, having his ponies trotted up and down, with their grooms mounted, over a piece of rocky and rough ground just in front of his door ; I joined him, and we talked of horses—a very favorite topic with him, and of which he has some curious information ;—I asked if he knew the Giangtchi breed of Thibet, which is a favorite with the chiefs in Nipal, and if it was not a very good one ? He said, “I know Giangtchi well, and the ponies you allude to, but they come from a long way east of that place, although the Nipalese may perhaps buy them there. They are very fine ones. There is a lake in their native district out of which a noble stallion was produced by miraculous means. He passed a season on its bank, and this is the origin of the celebrated Giangtchi blood, and there is no better in Thibet.” I remarked, “that the bit in the mouth of a fine colt that the groom was awkwardly shewing off was too severe, as it was bleeding.” “Oh no,” he replied, “it is not *his* blood, it is what he has just been eating. Pig’s blood, and

liver, that he has every morning in the cold weather?" Come, thought I, this is coming a little too far north of my zoology, but I was wrong; a brass basin was brought from the stable half full of raw blood, and bits of liver, the man dismounted, unbitted his nag, and the beast ate the horrid mess with evident pleasure, and seemed quite used to it. This is always done in Thibet, while the horse is growing, by those who can afford to do it, and it is said to greatly increase the fire and enduring power of the animal.

When travelling, animal food, fresh or dried, is always given, and on this diet the condition is maintained under the severest work. In the warm season oil and eggs are substituted for the blood and liver. "Will you sell me the Hubshee colt, Dewan Sahib?" "No, I cannot," he replied. "He, and that little bay are dedicated to the gods; but the mare in foal, and the chesnut are for sale." The gods have much the best of the Dewan's stable, and *he* takes good care of, and good work out of their property. It is the usage in Sikim to consecrate some animals of all sorts belonging to you (except the dog) and these are never sold nor given away, so that I cannot buy the young Hubshee,* which is a very good one.

The Dewan's huntsmen, and dogs have been out to-day for deer but it is a blank day. They started early to the brow of the hill just above our encampment, which is 1500, or 2,000 feet higher, and covered with a thick forest of palms, plantains, bamboos, and other tropical plants, and they beat it all down to the river without a find. The day before I returned from Tukbrum, they were more successful in the same locality; they drove a Rutwa right through the sleeping place of my guard, into and across the Teesta, the men and dogs followed on the bamboo raft used at the ferry, he took to the hill, but they hunted him again in the river, which he recrossed; and was killed on landing. I had mince collops of the haunch yesterday, which were delicate, and fine-flavored. The dogs all give tongue, when they are close upon the chase; but out of a pack of a dozen it is reckoned good if more than a couple give tongue upon the scent. In the warm whether the deer when driven to take the water often swim down for miles, keeping the middle of the stream, and thus escape their pursuers, but in the winter they cannot stand the cold of the water and rarely do more than cross

* Hubshee, African, so called from the curly hair of this sort of poney.

direct. The temperature of the Teesta to-day is 52° ; of the air in the shade 62°. Weather still cloudy and threatening.

Bangsong, 17th.—After my hunting entry of yesterday, the men took a fresh cast into the forest south of my tent, and between it and the suspension bridge. In an hour there was a great deal of whistling, shouting, a rush of bow and arrowmen past my door, and the dogs were in full cry at some distance. I followed the crowd down to the river gun in hand, but a horrible pair of thick-soled English shoes put on for the damp of the morning quite crippled me in scrambling over the immense boulder of clay slate, which are quite polished and very slippery from the action of the water in the rainy season, which raises the level of the river 15 or 20 feet more than it is now. The deer however, soon driven out, took to the river at once, and was swept rapidly across to the other side, where the Dewan was preparing for the Raja's camp, and shot him. The blood was brought over in a small Choonga for the colt, and the venison sent to the kitchen.

At daybreak this morning, the hunt was off again ; they crossed the river to beat the opposite bank, and about noon, there was great shouting and whistling, and a rush of people to the bank. All eyes were directed to a landslip, opposite which was a perfect precipice of loose rock and stones ; and here it was said the deer would issue. Sure enough he did so, and jumped into the foaming stream most gallantly. The Dewan, the Kaji, and I had guns loaded only with shot. All the others had bows and arrows. A volley was fired at the deer as he swam down with the current, but no mischief done to him by any of us. He put back to his own shore, swam strongly up the eddy along a ledge of rock until he found a landing place, and then took right up the hill just as the dogs and his original pursuers reached a point of the river 100 yards above him. The swim must have refreshed him, for he was not found again.

It was a good sight to see my ally, the Dewan, running over the huge and slippery stones to get a shot. He was barefooted, and that helped his paces : but his figure is fat and buncly. His dress was a fawn coloured figured China Satin Bukoo, down to his heels, and lined with long woolled, white sheep skin ; his head was bare, with a queue to his waist, and this with a green and gold Nipal Chatta in his hand, gave him any thing but a sporting look. I laughed, and could not

help it. He did so too very good-naturedly, and complained of the heat of the sun in these vallies. He was full of eagerness, and as joyous as a boy. In spite of his official quibbles and deeeits there is something simple and pleasing in his manners, and I dare say that if we were on a hunting party only, and I was to reproach him with all his falsehoods he would say they were "quite Pickwiekeian," i. e. Ministerial.

The preparations for the Raja's arrival are going on briskly to-day, and he will be here to-morrow I believe. Strings of goats and kids are eoming in. Firewood is being collected in heaps. The sheds are almost ready and people are hourly arriving to see the fun ; more than all, the Dewan sent to me this morning for some soap to have a regular serubbing, I take it, and I sent him my only spare eake of brown Windsor, my bearer remonstrating, and saying that Dliobies' soap would do as well, and so it would ; but there is not a bit even of this among us all !

Heavy rain last night again, and it is still cloudy. This is hailed with great pleasure by all the people along the Teesta, as it is just at the best time for the young wheat and barley erops. The small range of the Thermometer is remarkable in this situation,—all day yesterday it only varied from 58° to 62°, and at 6 p. m. and 6 a. m. this morning it stood at 59°.

There is no saul along the bed of the Teesta as on the Rungct, and oaks abound ; together with a profusion of the three palms already noted, bamboos and plantains at the river edge. The ehesnut and wild mangoe are in the same loeality. The wormwood which infests the abandoned clearanees up to 4000 feet in all parts of Sikim that I have seen, is collected here as food for goats ; and they devour it greedily. There is a tree very commou here, the outer bark of which is quite smooth and shining, and of a light stone or nearly white colour, it is the "Seling Koong" of the Lepehas, and peculiar powers are attributed to it. If a woman in the early part of her pregnaney touches the bark, her offspring will be fair and finely skinned like this tree. The leaf is like the toon and ash ; it is not now in fruit or flower.

Bangsong, 18th.—The Raja arrived on the opposite side of the river about 9 o'elock this morning. About 7, while I was dressing, the Dewan came to me to say he was off to meet his Highness. He was

accompanied by the Gantoke Kaji, and 3 or 4 other minor Sirdars, and had an escort of a dozen Lepchas armed with muskets, and dressed in long scarlet jackets, conical caps with the peacock feather in front, and black cross and pouch belts. The party looked very striking crossing the river on the bamboo raft manned by half a dozen wild looking Lepcha ferrymen. The raft here is pulled straight across the stream. There is a rope of 4 or 5 ratans stretched across, and fixed on either bank, by which the ferrymen pull the raft.

This is quicker than the plan on the Rungeet, where it is pulled across by a party on each side with attached ropes. In this way the raft is each time carried some way down the stream and has to be pulled up to the landing place. The ferrymen here and on all the ghats of the Teesta are so by an hereditary tenure. They can reckon 100 years of it here, from father to son. They get no pay, nor any ferry fees, but they are exempt from payments of all kinds, whether in money, grain or other service. All the ferries are exempt from transit duties on merchandise, &c. except the Katong one, and there although the levy is irregular in amount, it is not heavy. It is generally taken in kind on goods.

The system of Begarree (unpaid carriage labour) is the law of Sikim everywhere, and it is managed on a plan by no means harrassing to the people. There are fixed stages beyond which the people are not expected to travel, and they do not generally exceed two days' journey with a load. A man is therefore rarely more than 3 or 4 days at a time away from his home on these occasions ; but he has to provide his own food, and the frequency of the calls upon him are quite uncertain.

This has been a very busy day indeed at the ferry. All the provisions for the Raja's party are sent by the Dewan from this side, and all the people from the country between the Teesta and the Rungeet, as well as westwards to the Nipal frontier, are flocking in to make their salaams to the Raja. It saves them a longer trip to the Durbar ; besides it is a great novelty to find his Highness in this part of his territory, which he has not approached since 1837-8, when he met Colonel Lloyd at the Took Sampoo, 30 miles or so, south of this.

The provisions do not look very tempting as they pass by, but Bhotia cookery may do much for them. They consist of great sides

and rumps of yak, and bull beef, carried on the greasy shoulders and filthy heads of Bhotias, who *never* wash, and who wear a garment from its making until it is in rags, and shining in every part with the friction on sweat and dirt. Then there is butter in great quantities rolled up in leaves, and tied with strips of bamboo. This is cleaner, but peers out occasionally covered with dust, and in contact with the carrier's neck or arms, which is very sickening. Pigs, goats, kids, milk, fowls, eggs, sun-dried mutton, venison, rice, fermented murwa for beer, spirits, oranges, and plantains, I think complete the list. All good things enough, but the touch of a Bhotia ruins all in my estimation, and the recklessly filthy way in which they keep their food, and carry it about is altogether disgusting.

I have all day been an object of great curiosity to the new arrivals, very few of whom have ever seen a European before. Immediately the Raja arrived his followers came down to the opposite shore in groups to take a peep at me across the river, and after having seen me at the long range for some time, they would cross over, approach cautiously at first, salaam, and then commence their closer scrutiny. The texture of my coat, the bit of velvet on its collar, my pantaloons, and shoes, were all carefully touched and examined. One would say they were Chinese, another, Calcutta, a third neither one nor either. Then it would be asked, "Is the watch chain of gold, and the pencil case, and the ring?" All being handed round, and examined, the parties passed on to the little tent, examined the bed, the table, its cloth, the chair, the gun, the writing materials, and this was all it contained,—and to conclude their survey, the little kitchen close by, the saddles and ponies had their full attention. This sort of thing continued all day. Never was a wild beast at a country fair more run after, or sought for than I have been since morning. With all this intrusion and with the most familiar conversation going on between us all day, I did not once meet with the slightest rudeness or impertinence. The Lepchas are such cheerful fellows that even with the little I can speak of their language, I could raise a hearty laugh among them in few words, and often did so. The Bhotias are much more grave; but they join generally in cheerfulness, and were equally devoid of offence or annoyance, although quite as inquisitive.

The Maha Rance is with the Raja. She is rather young I hear, and

rode astride on horseback, when he travelled in a doolic ; occasionally riding a mile where the road admitted of it. Her women, and many others came during the day to the ghat to look at me, but none of them crossed over. Many women from this side took the usual survey of me, and all my chattels.

While walking out last evening, I came on a party of 8 fine young Lepchas on the river-side near the cane bridge. They were engaged at quoits, and after some talk they asked me if I would take a hand ; I did so, but did not make much of it. The quoits are thick pieces of slate weighing a seer or more, selected at the time, by the players. The distance is about 30 feet, and they deliver the quoit with a rotatory motion as we do. Each player has two quoits ; and the number of players equally divided for a match. We played at the stump of a small tree, at the root of which a peg was driven into the ground. If a quoit rests on this peg it is equal to a ringer, but if an after one rests on the first it alone counts, the first ringer being superseded and cancelled. We then had a turn at putting the stone, at which I beat them, all easily, when I saw the best they could do. They practise with "putting" a heavy and "drawing" a light stone, just as we do in the highlands of Scotland. They attributed my victory to my greater stature. There is something in that no doubt, but much more in having the knack of the game from childhood.

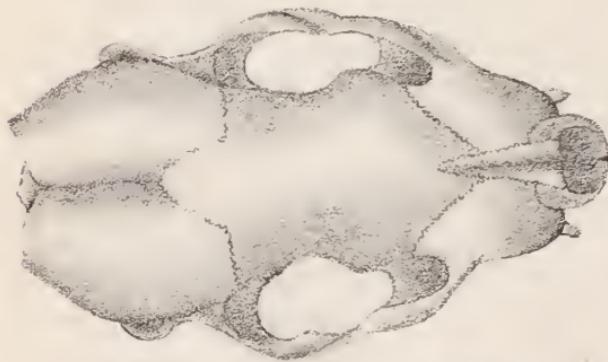
After the Raja arrived, I wrote to say I was glad to hear of his safety and well-being from the Dewan, and that I had been hereabouts for 8 days. Soon after the Dewan and Aden Cheboo Lama waited on me with the Raja's compliments, and said that a propitious time was sought for for my visit, and that as soon as it was known, I should be informed. It was my extreme pleasure, I said, to await the Raja's convenience, but should be glad of an early audience, if it so happened.

We then had a great deal of talk on sundry subjects, and they took their leave.

19th.—The astrologers have made a very happy cast in my favor, for it is announced that all is arranged for my visit to take place to-day at noon. This a happy exercise of enlightenment in an occult science. All is bustle and preparation over the way ; the ferry is plying at double tides, and I am getting a few attendants made as clean as possible to accompany me. This is not easy, for we have been a fortnight out, and they have had no washings.

TIBETAN POLECAT.

Pl. XII.



For the present, I close my journal to put on my own best for the occasion.

20th.—I was summoned to the presence at 1 o'clock yesterday. The Lasso Kaji came to escort me, and I crossed the river on the raft with my own Kaji, a Moonshi, 3 orderlies from the guard, and a couple of Chapprassies. There was some demur at the ferry to my taking the Sepoys. "Colonel Lloyd had none, none had ever crossed the Teesta before, the raft would be overloaded, &c. &c." I remarked that they were merely my personal attendants, being unarmed; and that if there was a real objection to their going across, it should have been made before I quitted my tent, and not actually on the ferry boat. After a little delay and consultation, in which I took no part, we were pushed off. The river is about 100 yards wide here, very deep indeed, the stream smooth, and water clear and green. We had about 500 yards to walk to the place of reception. On nearing it, the Dewan, very handsomely dressed in a light brown Satin Bukoo, and a large deep fringed crimson cap, came down the bank to meet me. He said that the Raja was all ready to see me, and that the visit would be entirely formal. I had previously asked if I should introduce any matter of business on that occasion. The reception room was a temporary building of wood raised on posts about 4 feet from the ground, with walls of split bamboo and a roof of green plantain leaves. The inner walls were hung round with drapery of crimson and gold China Brocade, figured principally in dragons and moons, which gave the apartment a subdued light, and a Chinese character. At the further end from the entrance was a temporary throne covered like the walls, 6 feet high at least, with steps leading up to it; on the top of this, and well back sat, the majesty of Sikim, a little old man with sharp and rather regular features, and fair complexion, dressed in a yellow satin robe, and a little yellow sailor-like hat, over the crown of which hung a profusion of scarlet fringe. On the right, and standing like draped statues against the wall were 4 fathers of the Church, viz. the Lama of Pemiongeli, a Lama, an illegitimate son of the Raja, the Raling and Rumtieck Lamas; they were all dressed alike in long robes of purple blanketing; their heads closely shorn, not shaved, and all were steadfastly counting their beads. But for the slight motion of their lips in counting, they might have passed for inanimate fixtures. Below the

Lamas came the Gantoke Kaji and other chiefs. On the left, close to the throne, and between it and the wall, stood two very fine looking young men handsomely dressed like the Dewan ; they were brothers of the Rance, Thibetans, from Turding near Digarchi, where their father is a respectable chief. Then came my chair, and beside me stood the Dewan and Aden Cheboo, who interpreted for me. My own Kaji, Moonshi and other folks of whom I know not any thing, completed that side. No one sat in Durbar, but myself, and there was not a person inside or outside the walls, who wore arms of any kind ; I never saw a more peaceful looking collection of men in my life. There was an unmistakeable and undescribable quiescence over the whole party that was very striking. It was clear at a glance that the genius of Lamaism prevailed here over all things, and I now fully appreciated what had often perplexed me, that was the manners of the Sikim Sirdars approaching so often to stolidity and abstraction. It is the mannerism of a priesthood, widely spread and deeply percolating the higher classes of the laity,*

The conversation was set and formal, but quite friendly. "Did I meet with any mishaps on the road ? Was I well ? How was the Governor General ? Was all well at Caleutta ?" and some other common places. The Raja believed I did not speak his language (Thibetan) and this constrained him to use an interpreter. This last however was very pointed, and I expressed my extreme regret at the fact ; but hoped that his Highness would excuse it, and kindly listen to any thing I might say through another person. Then came my turn. This was a day I had long wished for ; and it was now my happiness to express in person the friendly feelings of my Government for the Raja, and to shew as much as I could, how fully I participated in the same myself. The Raja replied in all sincerity I think, "The Company and I have long been friends, are so now I hope, and will always continue so." Then passed some formal questions and replies, about health, and the journey, in the course of which the Raja said that his age did not make him a good traveller now, and that he had been ailing, but the journey, in his desire to meet me, when he heard I was so near, had done him good instead of any harm. Then came in 3 trays of dried

* It is mannerism only, for they are sharp enough when self-interest or other pressing matters rouse them.

fruits, which were presented to me, and I begged his Highness to accept a few things from myself which were in two trays on the floor, and I took my leave. There was an apprehension on his part, I think, that I would suddenly come upon matters of business with him, of which I had no intention then, and I told the Dewan so. Before starting to the visit I was told that Colonel Lloyd, to comply with the usage of the Raja's Durbar, had presented his sword, which was the only thing he had with him, that it was given back to him, and that if I would present something in conformity to the usage, it would not be returned either. I said at once that I had no wish to disturb the usage, and that a few things I had brought should be presented after my visit. I took the articles* with me on two English tea trays, intending to present them on coming away, but they were smuggled in ahead of me, and lay on the floor during the visit. I do not grudge the Raja the satisfaction of putting me down in the annals of his house, as a bearer of presents on visiting him.

In the evening the Raja sent us the materials of a feast, consisting of two yaks, 8 fowls, 5 loads of rice, half a maund of yak milk-butter from Thibet sewed up in yak skins, a skin of tea, a bag of salt, some spirits, oil, milk, garlic and radishes. This amendment on the dried fruits was on the ruling principle in Sikim, which is to mend your manners, and improve your presents by degrees. It is a standing maxim in this country *not* to put "your best foot foremost," and an equally prevalent one "to hurry no man's cattle." Don't shew a leg at all if you can help it, is the rule, but if you have to shew, let it be reluctantly and very slowly. At best it is an ungainly foot when it *is* produced, and ungraciously done always, but it is not a cloven foot I think. With all their obduracy, reserve, jealousy and some alarm in contact with Europeans I would not at all look for treachery at their hands, and this is a redeeming point in people of their grade in the scale of civilization. So much is it the habit to hold back, that it is good manners to wait on the Raja for the first time in your worst attire, and you never ought to present any thing but the meanest trifle in food, or otherwise, on the

* Two English tea trays ; two Scotch plaid shawls, $3\frac{1}{2}$ yards of scarlet broad-cloth, a canister of snuff, a cut crystal decanter, 3 strings of large imitation amber beads, a pair of Britannia metal dishes, and some Derbyshire spar table ornaments, value in all about 70 Rupees.

first occasion. If the intercourse goes on, improve your manners, and your presents. That is the etiquette. I expect Hooker here in a couple of days. I was anxious about him lest he had been caught in the snow in the late bad weather, when crossing the Kanglanamo from Nipal. The Dewau knew of my anxiety, and had some days ago sent off to the frontier for intelligence. To-day he came running down to my tent with a letter from Hooker to me in his hand, and was quite pleased at my satisfaction in receiving it. He is like other folks, an odd compound off business ; he can be quite pleasing almost, and engaging. He tells me that the wild yak in Thibet is larger than the wild buffalo in India.

"The lungs alone are a load for a tame yak, he is quite untameable and horribly fierce, he falls upon you with his chest, if he catches you, and rasps you with his tongue, which is so rough that it rubs the flesh off your bones. The Bhotias shoot him with a bell-mouthed blunderbuss of large bore, which has a rest attached to it. They are good marksmen, and will hit a target with it, at a distance that you cannot distinguish between a white horse and a black."

Talking of the cold in Thibet the other evening, he told me that it was so intense and increased so suddenly in some of the high passes of that country that persons had been frozen stiff while in the act of climbing up a mountain, and remained standing with the chin resting on a stick, until the sun of next day had thawed them, and the bodies tumbled down. Out of Lassa, Digarehi, or Giangtchi, and a few other towns, it is, he says, a wretched country to live in. "The land produces nothing but wheat, the wind is so sharp that it cracks the skin of your face, and as for wood to burn, or build with, there is not a bit anywhere. At Digarchi a stick the size of this tent-pole, 6 feet by 3 inches, would readily fetch 3 Rupees. Sheep they have however, in great abundance, and the wool is of beautiful quality ; but for all that neither the Thibetans or the Chinese can make anything with it equal to English broadcloth. "What did that coat on you cost in Calcutta ? there is nothing like your Bunat anywhere," and thus he went on replying to my questions. All Thibetans have the greatest admiration for our broad cloths, and for purple, brown and dark yellow colours will give high prices. "Is there any opium smoking at Lassa ?" I asked at one of our meetings. "There is some, and they are mad to

get it, but the Chinese have put many persons there to death for using it. Nevertheless it is to be had; and I have known as much as 30 Rupees paid for one pipe of it." "Is there any sent from Nipal?" "Yes, a good deal, but it is at a tremendous risk to the smugglers." I put this question, as I knew that our opium agents in Sarun and Tirhoot used some years ago, and do so now probably, to make opium advances in the Nipal tarai, which yields superb poppy. If the Goorkhas took to smuggling into Thibet as our traders do along the coasts of the Flowery Land, we might have successful rivals for the Sycee,* but they have not a taste for this sort of dangerous traffic, nor for outraging the laws of China on its own soil.

21st.—I had purposed leaving this to-day on my return to Darjeeling, but I wait for Hooker. He will like to see these Sikimites at head-quarters, and will have no other chance of doing so. The people still continue to flock in from the westward to make their obeisances to the Raja and present their little offerings. These consist entirely of articles of food—in pork, kids, rice, fowls, eggs, milk, Murwa for beer, butter, spirits, plantains. At their departure they are honoured with presents of salt, tea, and blankets; all Thibetan articles are highly valued in Sikim.

I came this evening in my walk on an invalid taking the warm bath, which is such a favorite remedy in Sikim, (the Sachoo,) and before saying more about it, I wish to guard other travellers against mistaking these baths, when the Lepchas describe them for warm springs which have the same denomination.† It was close to this on the river-side. The bath is hollowed out of a rough log, and is 7 feet long, about 3 deep, and 2 wide. The water is warmed by throwing in hot stones until it is of the desired temperature. The patient was in the bath when I came up to it; at the foot of the tub was a large log fire, in which were a number of stones about 4 lbs. weight each; hot and ready for use. An attendant kept the fire going, and every now and then as the water cooled, and at the patient's bidding, he put in a stone extracted from the fire with a pair of bamboo tongs. I felt the water and thought it rather hot, so I sent for the Thermometer. It was 110° of Farenheat, and just then a stone was put in which raised it to 114°, and this was the point the patient kept it at while I staid. He

* Ingots of China silver.

† Sa, hot—choo, water.

was quite red in the face and was sweating profusely. Now and then he washed his face with cold water, and took a mouthful to rinse and swallow. When rather exhausted he came out, sat on the tub side naked for some minutes and went in again. He had been at it in this way for some hours, and said he would repeat the process for the same time for two or three days. He was in the open air, which was however very mild. The Ther. stood at 60°. His complaint was pain in the chest.

We had very heavy rain again last night. It has rained here less or more nightly for a week. The Thermometer was down to 49° at daylight, when it was clear; a heavy fog formed soon after which did not disperse till near 9 o'clock. The river rose about a couple of feet during the night. I reckon by the rattan which is stretched across for the ferry-raft.

27th.—Top of Mainomchoo. Elevation 10,500 feet—2 feet of snow on the ground. Ther. at noon in the shade 32°. Bright, clear and very pleasant. It rained almost all day of the 22nd, and was unpleasant enough, as I had no means of moving about. In the evening I had a note from Hooker saying he would be at Yangang, one march off, that night. He came in to Bangsong on the 23rd in fine health and spirits, well pleased with his trip, and still purposing to prolong it. He had reached the top of the Walloongchoong pass into Thibet, about 16,700 feet high, having travelled the last 8 miles of the distance with snow on both sides up to the shoulders. From Walloongchoong he descended along the Tambur river to the junction of the Yangma, and then ascending that feeder of the Tambur failed in reaching the top of the Kanglachema pass, which appeared to be considerably higher, for he reached 16,000 feet and still far from the top. The Kanglanamo had been closed for 3 months. In the Yangma valley he found distinct remains of ancient glacial formations in dry lake beds and terraces, with boulders deposited along their margins.

The trade with Thibet is carried on entirely by Bhotiahs, and is principally in salt from the lakes; yaks and sheep are alone employed in the carriage of it. At Walloongchoong, which is two journeys from the pass, there is a salt interpôt whence the Nipalese of the lower regions supply themselves; a few planks was the only thing he saw taken to Thibet. The yaks breathe hard and laboriously in the snow,

but toil most enduringly. From the Yangma valley, not being able as originally intended to enter Sikim by the Kanglanamo pass, which had been snowed up since October, he crossed the Nango ridge, 16,000 feet, into the Kambachen valley, and thence crossed the Choongjerma range, 15,000 feet, into the Yalloong valley, whence over the Singalelah ridge he reached Lingehoon in Sikim.

From Lingehoon he joined me via Pemongchi, Dalling, and Yangang, having crossed the Great Rungeet above Rinchingpoong.*

The meeting with Hooker has been a most gratifying one. It was quite delightful to listen to his frank and modest account of his laborious and tedious journey, in the course of which he had to encounter what to many men would be great privations. For 18 days he had to subsist on 8 days' provisions, and was at last reduced to coarse boiled rice, and Chili vinegar! His discoveries in glacial Geology are altogether new in this part of the Himalaya, and although the lateness of the season deprived him of many of the plants of the higher regions, he has still made large collections. He has 18 species of Rhododendron for instance, many of them hitherto unknown.

On the 24th we had an interview with the Raja, at which I took my leave, and Hooker made his first and last appearance. It was on the whole satisfactory for my affairs, and I greatly rejoiced at having made this trip to the Raja, in the course of which I have largely added to my knowledge of himself and his people, and consequently to my power of improving our own position with them, and adding to their knowledge of me and my Government. On the latter, and on the real nature of our power in India, and England, they are wofully ignorant, and not a little misinformed. I had, and took some good opportunities of talking with effect on this latter subject to the Dewan.

On the 25th started from Bangsong and returned by my outward route via Lingmoo and Neh, to Brom, whence, instead of keeping along the bottom of the Rungoom basin, we ascended via Sok to upper Namfok, near the residence of the Lassoo Kaji, and a well peopled place, with neatly fenced fields of wheat and barley, and some patches of mustard and radishes. The profile of Mainomchoo from this is very wild and bold. Perpendicular cliffs of rock dipping to the north-

* I am answerable for any inaccuracies that occur in this outline of Hooker's journey.

east, and sharp peaks rising in different places along it. Hooker has made a striking sketch of it. Thermometer at 6 p. m. 46° ; 10 p. m. 43° ; fell during the night to 36° .

On the 26th started for Mainomchoo, about 500 feet above last ground, and two miles distant, in a westerly direction, came to Yangang, where there is a Goomba, and just below it, in a very pretty spot, a small piece of water 400 yards in circumference, and said to be 15 feet deep. Put up a Woodcock here. From Yangang commenced the ascent of Mainomchoo. For the first hour we rode our ponies over a good road, and easy ascent, at the end of the second hour we came to oaks, chesnuts, Rhododendrons, and the paper plant. At the 3rd hour came upon patches of snow in shady places, birches and pretty purple primrose just coming into flower. Road steep, and overgrown with jungle. After 5 hours slow ascent we were obliged to halt for the coolies, and encamped 500 feet from the top, in a foot and a half of snow. Elevation 10,000 feet. Ther. at 6 p. m. 34° ; fell during the night to 24° . Surface of the snow 36° .* It was wretched work for our bare-footed servants and coolies, who had to clear the ground of the snow for places to cook and lie down on, and cold enough for any one even with better appliances than theirs. One of the men went tumbling down the hill with his load, and we have lost all our stock of wine, brandy, butter, and almost all our sugar. The snow water, which is all we had, makes very good tea; but beware of getting it smoked in the melting.

Started at 7 this morning, and in an hour reached the summit of the hill. Snow two feet thick, and just hard enough to bear our weight.† A bright and clear morning—ascent very steep, and no road; cut our way through an under jungle of small bamboos, with a forest of pines, *pinus*, *Webbiana*, birches, and Rhododendrons. There is a small Goomba of two rooms, which occupies all the cleared portion of the summit, and in this we have taken up our quarters, for the Lamas do not come at this inclement season. In the outer room is our kitchen, we occupying the inner one. It is open at both ends of the roof, and has a very poor

* All the Thermometrical observations since the 23rd were kindly given to me by Dr. Hooker.

† We came upon a covey of the beautiful Chilmia; their scarlet legs and bright plumage enabling us to see them a long way as they ran over the snow.

covering of 4 feet long thick shingles of pine loosely laid on rafters. We burn fires of pine and Rhododendron in both apartments, and barring the smoke, which is abominable we are snug enough. Hooker likes fires, and is indifferent to smoke. I do not like one or the other in the jungles, and prefer cloaking up to the cold. Here there is a full view of all the snowy mountains in Sikim, and of nearly the whole lower hills besides. It is a rare peak for the Geographer and admirer of mountain scenery. But Kunchinjinga is by no means so fine as from Darjeeling, the full view of it is cut off by the peaks of Nursing to the right, and Pundeem on the left. The great Rungeet, which rises from a spur of Kunehin bearing N. by W. from this, sweeps by a westerly and southerly course to Tassiding, which is a very remarkable place (and the connection of Mainomchoo with Kunchinjinga on the N. W. is by a saddle to the N. of Gongong.) It (Tassiding) bears from this S. 78° W. and is a nearly insulated eminence, round the N. east and south sides of which the great Rungeet flows, the Ratong flowing by its N. and W. sides. Tassiding is the most sacred spot in Sikim I believe, and besides the goomba has many tombs of famous Lamas. It is compared to the hill of Sumboonath in the valley of Nipal, on which there is a beautiful Buddhist temple. The two hills are somewhat similar in form ; but there is no building in Sikim to be compared to that at Sumboonath for size or beauty.* On the ascent to Mainomehoo I had a peep at Tumloong, the residence of the Raja. It was but for a minute, while clouds broke over it : and I did not get a bearing. It appeared to be on a spur from Chola : the Ryote river running to the east, the Runnett to the west of the spur. From the position of "La Ghep" of the Chola route, which I got from Mainomchoo, I think that Tumloong bears about 70° east from Mainomehoo.

28th.—Yangang, about 5000 feet above the level of the sea. Returned here to-day from Mainomchoo. The descent, which is upwards of 5000 feet, took us above 4 hours. It was a beautiful morning on the top of the hill, clear sky, bright sunshine, and hard frost. The thermometer fell during the night to 21° , and at 10 A. M. on the surface of the snow was 25° . On our arrival here the Lamas of the Goomba

* I feel that the correctness of this remark is doubtful, since I have carefully examined the Goombas at Pomiengchi ; I give the palm for beauty to Sumboonath nevertheless.

paid us a visit, bringing rice, eggs, butter, milk, &c. &c. They apologised for not bringing kids, or oxen, lest they should be necessary to the destruction of life, which is against the tenets of their religion.* They suggested that we should assist with some contribution towards roofing the new Goomba with copper instead of bamboos. The party consisted of a principal, and 6 or 8 companions, all fat, placid, and well-bred men. "Now, that you have seen Sikim, what do you think of the country?" said the spokesman. "It is just the sort of wild country we like to travel in, and the people are very pleasing and hospitable," was the reply, and this is the truth. Kindness to strangers' frankness, and hospitality eminently distinguish *the people*. The outer walls of the monastery are built of stone with a white mud mortar, decomposed mica slate, the inner ones of mud mixed with sand and pebbles of clay slate, which is beaten and stamped into wooden frames six feet long, and 3 feet wide, and tiers of this are laid one over the other. It is similar to the Pisi work of Italy, and answers very well for walls not exposed to wet. Thermometer at 9 P. M. 45°. Water boils on Mainomchoo top at 192 $\frac{1}{2}$ °.

29th, Lingdam.—We visited the Goomba at Yangang this morning before starting, and found the Lamas at their morning religious exercises. They were civil and polite as usual. It was term-day with their tenants, who were collected round the Goomba; some to pay their house, or family tax, which takes the place of land-rent in Sikim, and some to make offerings of rice, murwa for beer, beef, &c. The library we saw did not exceed 20 volumes; and there were about a dozen images of gilded brass and painted clays, ranged in a bookshelf like a cabinet, one image in each compartment. In the centre was the image of Sakya, called Sakya-thoba, in Sikim; the names of the others were altogether unpronounceable.

After Hooker had taken a circle of bearings we started for this place at 10 A. M. and reached it at $\frac{1}{2}$ past 3 P. M. having stopped an hour at the top of the Raklang ridge. Taking this march altogether it is an exceedingly interesting one, and the scenery from this side of Raklang is very fine indeed. Our route from Yangang lay N. W. along the west face of Maiuomchoo, descending gradually into the bed of the Rungpo, which we crossed; and then we ascended

* They do not eat the less beef on this account.

rather steeply to the saddle of Raklang, which is the connecting point of the Tendong division of Sikim with the mountain of Mainomchoo. This saddle is about 7000 feet high, and two roads diverge at the point we made it; one to Raklang Goomba, one march in a northerly direction, and the other to the west to Pomingchi, and the old Sikim Durbar via Lingdam, Kazing and Tassiding. In fact we have come to-day along the high road from the N. W. districts, and from the old to the present seat of Government. A very fair road it is too. The last mile up to the saddle of Raklang runs through a fine forest; and this fine avenue continues on this side for more than a mile, when suddenly emerging from the forest, Tassiding and Pomingchi on the opposite side of the Rungeet, burst upon you right in front and to the west. Tassiding is from all points of view a very remarkable and striking feature, and it shall be more particularly described anon. To the N. W. is Sunoong, a small Goomba, and beyond it in the same direction is Powhunny, a flat-topped mountain, probably 8000 feet high, greatly resembling Tendong, with a decaying Goomba on its summit. Further west is the Kechoppery Goomba, on the north of which is said to be a lake of the same name. From Lingdam 11 Goombas are visible; they are named, and bear by compass as follows: Mainomchoo N. 50 E.; Raklang N. 30 W.; Sunoong 45 W.; Kechoppery 73 W.; Malli 77 W.; Tassiding 77 W.; Pomingchi W.; of Dalling Powhunny, Mangberoo, and Changachiling I did not get bearings.

There is a high cliff on the west face of Mainomchoo, which has a large patch of greenish blue on it. The people believe it is of turquoise, for it is quite inaccessible. Hooker informs me that it is a Lichen. After crossing the Rungpo we came upon a large rock 30 feet by 13, with "Om, Mane, Pemi, Om,"* carved on it in gigantic letters 3 feet long, and in numerous places the same invocation in smaller letters. At the upper left hand corner of the rock there is a large inscription in the Thibetan character, which is supposed to record the time at which the large letters were engraved, and something concerning the person who engraved them. He was the head Lama of the neighbouring Goomba at Raklang. This however is not authentic. It is usual and proper for travellers to walk along the face of the rock

* See a most interesting notice of this popular prayer by M. Huc, p. 238 of No. 49 of the Annals of the Propagation of the Faith.

on a 2-inch ledge which runs over the top of the large letters. This may be done easily enough by bare-footed persons holding on with the hand; but that has no merit, and it is only he who walks 3 times along it without holding on, who does a righteous and holy act.

There is a filled up lake here, (Singdam,) about 100 yards across, with a clear stream running out of its bed, which crosses the road and precipitates itself over a rock, about 40 feet high, and close to the road. Thermometer fell during the night to 39°. Probable elevation 5,500 feet; some neat houses close to our encampment, surrounded by fields of wheat and barley, and well fenced. The inhabitants in this neighbourhood are principally Bhotiahs, and they are generally well housed, comfortable, and good-looking.

Suneek, a village on the ridge N. of Tassiding.

30th.—We had hoped for a bright morning, and a grand view of Kunchinjinga from Lingdam, but awoke to a cloudy day and limited prospect. This is comparatively speaking, for with Mainomehoo, the singular Tassiding, Sunoong, Raklang, Dalling, and Pomiengchi, together with the swelling and level spurs of Lingdam itself, we had a scene of much beauty and interest. Soon after starting we passed through Bamfoong, and two miles further on in a westerly direction came to Kayzing, all the way by a nearly level and wide road. A buggy drive of 3 miles might be constructed along the Lingdam Leang at little cost, and used with perfect safety, so swelling and nearly level is it throughout a great part of this extent. It is the finest situation by far I have seen in Sikkim for farming and grazing purposes. The plough might be used most easily, and there are numerous sites for commodious farmsteads above and below the road. In such a locality the industry and perseverance of colonists, like our excellent German ones at Darjeeling, would be turned to full account.

From Kayzing, we descended steeply to the Great Rungeet, crossing the Runeok, a feeder of it from Lingdam. There is a bamboo suspension bridge over the Rungeet below Tassiding, of simple and singular construction. Three large bamboos, the ends of which are held down by stones on either bank, form the arched parapets by their smaller ends being pulled down and lashed together. From these parapets are ratan suspenders, on which the roadway also, of 3 bamboos, lies, cross uprights fixed in the ground support the ends of the roadway.

The river is about 80 feet across here. The ascent to Tassiding is very steep indeed ; it took an hour and a half. The summit is 2500 feet above the river, and is entirely occupied by temples, chaityas, mendongs, and the dwelling houses of the Lamas ; a very remarkable place indeed. The hill, which is rounded to the south, rises abruptly from the Rungeet and Rotong rivers, which flow along 3 sides of it, and unite their waters at its southern extremity ; it is well wooded to the top. Darjeeling bears due south, Sinchul S. by W. ; our road lay through all its buildings, whence we descended a short way to Suneek, as there is no water nearer.

31st, Suneek.—We halted here to-day, and went up to Tassiding to examine it more carefully. The buildings consist of 3 Goombas, two large and a centre smaller one, which is painted red on the outside, with a border along the top of the walls of white skulls with black teeth. This is the Goomba now used for every day worship, but it was originally dedicated to the devil, and other deities of evil omen. All the Goombas are built of stone, with very little mortar of whitish clay. The masonry is admirable, and although the buildings at Pomióngchi of the same sort are said to be from 3 to 400 years old, they are in perfect preservation. The northern and largest Goomba is a handsome edifice, about 80 feet long, 40 broad, and 35 feet high. It tapers from the foundation to the summit, and has a pitch-roof of bamboo thatch rounded at the ends, and projecting about 10 feet beyond the top of the wall, so as fully to protect the base. The only entrance to the lower story of the temple is at the eastern end, it is 3 stories high, and in each story are narrow windows of lattice-work. The body of the lower story is divided into a vestibule, which runs the whole breadth of the building, and into the temple proper, which is 42 feet long by 33 feet wide. It is equally divided into a centre aisle and two sides, by three pillars on each side. The pillars are of wood, very handsomely painted in vermillion and gold, and support 3 massive architraves, which extend across the building and are beautifully painted in squares and diamonds of bright vermillion and gold, with dragons in white, vermillion and gold. Over each pillar is a gilded Lion with black terminal tail-brush. The effect of the painting, as it is in very brilliant colours, is extremely good. The centre aisle has a low bench on each side covered with yellow and purple felts, for the seats of the Lamas only, on great occasions

of public worship. At the head of each bench is a raised square ottoman covered with leopard skin, for two of the higher Lamas, or for the officiating ones, as may be. These benches were the only things in the Goomba which the Lamas were particular about not being touched by our followers.

The western end of the temple is occupied by a range of 11 large images. The principal one, about twice the natural size of a man, occupies the centre. It is named "Chomden Day,"* which means "God ;" it is in the sitting posture, cross-legged, with the right hand resting on the right knee. In the left is a black bowl, said to be for food. On the right and left of the great image is a tonsured Lama, or Chela, standing each with a black bowl in hand, and said to contain food for the deity. The right hand one is named kungan, the left mangah. These images are flanked on either side by 4 handsome images holding flowers in their hands, and said to be attendant satellites from India ; "Gyagur" is the Thibetan for India, "Gynak" for China. All these 11 images are gilded and 10 are standing erect. In the wall behind them, the sun and moon are painted, the former on the right of the centre image, the latter on the left.

The whole of the inner walls from the ceiling to 2 feet from the ground are painted with figures. On the right of the entrance door are 3 very good figures. The centre one represents the 3rd Raja of Sikim, who was also the Pontiff of his own kingdom, and who bestowed his daughter in marriage on a Lama of Sunoon Goomba, the monks of which were privileged to marry, and whose descendants are still at Dobtah in Thibet enjoying the same immunity from celibacy.

On the left of the Raja is his daughter—a young and captivating damsel, in a broad-brimmed Chinese hat ; on his right is the revered Lama the favored spouse of the lady. The "Lama Raja," which is equivalent in Sikim to "Sovereign Pontiff," and his fair daughter are very excellent paintings.

On the south wall to the right of the images is a large red painting of an 8-handed Shiva trampling with the right foot on two white human beings ; with the left on one black, and one yellow human figure. This large Shiva is surrounded by 8 smaller ones, and beyond these are innumerable Lamas sitting cross-legged, some dressed in red

* Chomden Das is Sakya Singha.—*De Coros.*

and yellow robes with conical red caps, and some with bare tonsured heads, some sitting in contemplation, others apparently expounding.

On the left of the images, north wall, is another large, many-handed figure with a conical head-dress, which is thickly studded with eyes and human skulls. With the right foot it is trampling down an elephant and lion. With the left, an elephant, a human being, and a snake. This image has 10 pair of arms in all, one red and nine blue. On either side are 4 smaller 12-handed figures of the same image painted blue and trampling on human beings. One of them trampling on a buffalo. Around are numerous Lamas in silent contemplation, or with hands upraised, expounding. In the whole of this temple there is not one lewd or indecent figure. Not one hooded snake of Vishnoo. Not one Trident of Mahadev. Not one figure of Krishna, nor any figure with the brahminical string. Between the above group and the "Lama Raja's" group is a large figure of Vishnoo in the sitting posture, surrounded by leaves, flowers, and unexpanded buds of the Lotus, which is named "Pe-dong" in Thibetan. The flowers are of 3 sorts—white, pink, and red. This deity is named "Lobe Pema Toongni," which being translated is, "self-produced of the Lotus." At his right foot is a female deity of Gyagur* or India, coloured white with bead necklaces. At the left foot is a female deity of Thibet, named "Kando Ishe Sage," also white with bead necklaces, all around, as in the other groups, are innumerable figures of Lamas. So much for No. 1, or the northern Goomba.

No. 2, or the southern one, displays a different style of images. Facing the doorway† and at the termination of the aisle is a recess, about 10 feet deep, containing the principal images, which are 5 in number. In the centre of the recess, and raised above the others, is "Lobe Runboochi," in a sitting posture, holding the "Dorge" in his right hand; which rests on the right knee; in his left, a cup for holy water to be sprinkled on the congregated worshippers. Supported by the left arm is the Trident of Mahadeo, on the shaft of which are pierced human heads and skulls, with 3 dorges. In front of the head-dress is

* Gya-nak, China—Gya-gar, Indian Gya var Russian.—*Klaproth.*

† All the Goombas have the great entrance to the east, and their length is east and west.

a Lunar erescent surmounted by the sun. At his feet is a plume of Lotus flowers and buds. Large ear-rings hang from the pierced lobes and a robe of blue and gold closing over the right breast, with an under garment of red and gold, complete the costume and the symbols of this compound deity.*

On the right is a female image, "Kando Ishe Sage," holding a cup of water in the left hand, while she sprinkles the great image from it with the right. Further on the right is the image of a Lama named Lapechen Chimboo. He is in the sitting posture—his legs crossed. In his right hand he holds a human thigh-bone used for calling to prayers, in the left a cup for food. The left arm supports a trident with human hands, skulls, and dorge on the shaft, and the head-dress is ornamented with a wreath of human skulls. This image is painted pale blue and has necklaces of beads.

On the left of the great image are two Lamas, one of them is offering him the "Nurbo," the other a human skull. The Nurbo is an arrow-shaped piece of gold with 3 jewels set in it; at least it appeared so to me. It is said to be the offering of highest priece, and to emit a spontaneous light at night.

This was all I could make of what the Lamas knew of the "Nurbo."

In the vestibule are two large devilish figures painted on the walls on either side of the doorway. One is black with white teeth, and claws and horrid goggle eyes. The other is yellow, and of similar stamp. They represent deities, who destroy ghosts and other demons. This Goomba, No. 2, contains the Library, which at present has only 82 volumes.

These were very neatly ranged in two cabinets, which occupied recesses in the centre of each side of the body of the temple. For each volume there was a separate compartment, and in the centre of each

* The trident and skulls being Shivaite symbols, the dorge and cup Lamaical. The whole of the symbols belong to Nâthism, as recognised by the northern Buddhists. The dorge is the Viswavagra, or double thunderbolt, and the deity described is Goroksha-nath, from whom the Gorkha nation and the district of Gorakhpur derive their names. He is the great Yogeshwar or Natheshwar of these regions. His followers are called Yogis or Joggis on this side the snows; Ningmapa on the other side.—*B. H. Hodgson.*

cabinet the image of a Lama sits enshrined. These images are gilded, and hold a blue bowl, called Soongjup, in the right hand. The cabinets are handsomely painted in gold, vermillion, and blue, and had a very good effect. The volumes were of the usual kind, 2 feet long 9 inches broad, and 9 inches thick, composed of loose leaves rolled up in cloth, and two carved wooden boards strapped over them for binding.

Next to the Goombas, the "Place of Tombs" is the most interesting object at Tassiding.

It lies at the south end of the terrace, and contains 26 Chaityas or funeral monuments, of various sizes, all built of stone, with a little clay mortar, and in excellent order. The centre of the group of tombs is occupied by the largest of them, which is a fine looking, and well proportioned monument. The basement is 27 feet square, and rises by 4 steps. From the top of this platform springs the shaft, which is about 4 feet high, and is surmounted by a cornice projecting 4 feet; over this is a second shaft which tapers by 5 steps, and resting on this is what may be called the bowl of the Chaitya. It is in some instances a hemisphere, but much more frequently is a truncated oval. From out of the bowl rises the Pinnacle, which is 4-sided, and tapers to a point, or is occasionally surmounted by a wooden apex representing a Lunar crescent with the sun's orb in the centre. The height of this Chaitya, which has a basement of 27 feet square, may be 25 feet. Near it is the monument of the heir apparent of Sikim, who died in 1841, and was not a Lama. At Pomiongchi, the Chaitya built to the memory of a great ally of mine, the Badong Kaji, was pointed out to me. It was in all respects the same as others built in honor of holy Lamas, and I believe that these monuments to the laity share the veneration that is accorded to those of the priesthood. Chaityas and Mandongs in Sikim, on the road and elsewhere, are always passed on the right hand.

On the north side of Tassiding, and close to the summit, there are some rocky crevices which emit heated air; at 5 p. m., the external air was at 51° of Faht., in one of these crevices it was 64°.

January 1st, 1849.—Pomiongchi Goomba.—We left Suneek at 8 A. M., after an hour's steep descent in a N. W. direction we reached the Ratong river, which we crossed by a very rickety bamboo bridge, like the one over the Rungeet below Tassiding. Both banks of the Ratong

very precipitous ; breadth of the stream 50 feet. At the top of the first ascent is Kamett, a small hamlet of Lepchas ; further up is "Tashong," where the road to Darjeeling by Rinchinpoong goes off to the left, and next is Sakiong, the site of a decayed Goomba. Here there was a good deal of wheat and barley cultivation well fenced in. From Sakiong the ascent is steep, and through a fine forest all the way to Pomiengchi. From the Ratong it took us $2\frac{1}{2}$ hours good marching.
 * * * I never go fast up hill when marching. This I have adopted from the coolies, who never quicken their pace to the sweating point, unless very much urged, and then they knock up.

Elevation of Pomiengchi 7000 feet.* The Goomba commands a superb prospect of the snowy range, and almost of the whole of Sikim. It is beautifully built of stone, is 3 stories high, about 30 feet, is 80 feet long by 40, and has stood for 8 reigns of the Sikim dynasty, which the Lamas reckon at 400 years, i. e. an average of 50 years per reign, which is doubtless too much. The present Raja however has reigned 64 years. He came to the throne at 6 years old. His father, who fled at the Goorkha invasion, and died in Thibet, reigned 33 years. The particulars of other reigns are not known.

When the Goorkhas invaded Sikim the Sikimites assembled to oppose them at Nagri, (the Nagarcote of our treaty of 1816 with Nipal,) but while a portion of the force kept the Sikimites in occupation at Nagri, the main body turned their flank to the north, and came over Islimbo into the valley of the Kullait ; so rapid and sudden was the incursion that the Lamas at Pomiengchi had not time to remove their books or other monastery property, but fled to the Ratong, where they died of cold and hunger.

The library, which had 400 volumes of Thibetan works in gold letter press on black ground, was burned, and a similar fate fell upon the books, &c. at Rabdenchi, the old Durbar, which is close by Darjeeling, bears S. 4 E. from Pomiengchi, and is distant about 30 miles.

The following are the principal figures and images in the Goomba :—
 In the vestibule—

1 *Tangla*.—A Thibetan deity mounted on a white horse.

* The elevations noted in this journal are from Colonel Waugh and Dr. Hooker. They are respectively Trigonometrical and Barometrical results.

2 Looi Poomoo.—A female deity (mermaid like,) all under the navel is a snake, the head is crowned with snakes. She is the daughter of Nagarjun, the great snake king or snake God of the Hindus—a form of Shiva.*

3 Dorle.—A Thibetan deity. He is mounted on a sphinx, or it may be a liou.

The body of the temple is a good deal like the Tassiding ones already noted. Three pillars on each side, very handsomely gilded and painted, form the aisle. Felt seats raised a foot from the ground run between the pillars ; they are exclusively for the Lamas.

The side walls are painted in numerous groups and figures, from the ceiling to within 3 feet of the floor. The images are in a deep recess at the west end of the aisle, and nearly as large as life. They are as follows :—

1 *Sakya Thoba*.—The great Apostle or Avatar of Buddhism. He occupies the centre of the recess and of the group.

2. A tonsured Lama on the right of Sakya, standing with the pastoral staff in hand.

3. Ditto ditto on the left of Sakya.

4. A red-faced male image with a 4-armed female one clasped round him,—left of Sakya.

5. A red-faced image of Shiva,† with ornaments of human skulls, and a woman clasped round him in indecent attitude. Left of Sakya.

6. A white-faced male image with a trident over the left shoulder, human skulls, heads, and the Dorje on shaft of trideut ; right of Sakya.

7. A blood-red image of Devi, the goddess of destruction, war and pestilence ; right of Sakya.

8. A red male deity sitting cross-legged with the hands folded over the knees.

9. A white image with the Dorje in hand.

* Nagarjun is one of the beatified sages of Buddhism, to whom Mount N. Ajon in Nipal is dedicated. The snake king is Kakotâk, a Buddhist deity, also after whom Nipal is called Nâgbâs.—*B. H. H.*

† These are images of Tantrica Buddhism, *not* of brâhmanism, as commonly supposed.—*B. H. H.*

10. An image of the first Raja of Sikim, who was deified. It is treated as that of a deity.

The walls are principally occupied with paintings of Lamas, white and yellow skinned, sitting in deep thought or expounding, the right arm being raised. There are also, among others, the following marked figures :—

1. A Shiva, I suppose.* Face and body red, the shoulders and body partially clothed with skins of human beings, tigers and snakes. It has but one foot, which is placed on the back of a gigantic human being, who is crawling with his load, the features of his face painfully distorted.

2. *Another.*—Face and body blue. Bow and arrow in hand, neck and head ornamented with human skulls.

3. *Namgemoo.*—An 8-handed 4-faced figure. The face colours are white, red, blue, and yellow—a face of each.

4. A full length painting with a Lama's mitre-crowned cap ; the Dorje in the right hand, and the trident in the left. This, as well as many of the images and figures already noted, unite the Shivaite symbols of Hindooism with those of Lamaism, and this union is I think the true representation of Buddhism at Pomiengchi.

The conversion of the Lepchas to Lamaism was not rapid. It took 3 reigns before it was general ; it is by no means universal yet. The indigenous Bhotias of Sikim, Arhats, held back from the new religion less than the Lepchas. The Magars and Limboos, were and are the most recusant of all. When they quit their own religion, (if sacrificing fowls and pigs to propitiate evil spirits can be called religion,) they adopt a sort of Hindooism. The Lamas of Sikim are however the most tolerant of priests, and not to follow them in the faith does not bring persecution or mischief to any man's door. We had hard frost at Pomiengchi on the morning of the 2nd ; at 7 A. M. the thermometer in the air stood at 32° . On the ground at 25° . Here I was to leave Hooker after 10 happy days spent together. He had to start for Jongri next day ; I did so for Darjeeling, and marched to Tadong. He accompanied me as far as the Gayzing Mendong, which is about 2000 feet below Pomiengchi, and to the south of it. It is the most extensive of all the Mendongs in Sikim ; it is 200 yards long, about 10

* See second note, p. 537.

feet high, and as many broad. At the north end is a Chaitya, and at the south end an upright stone 9 feet high, fixed in a basement of dry stone masonry. At 4 feet from the ground, and along both sides, is a line of inscribed and figured slabs, 708 in all. The figures are principally Buddhas in the usual sitting posture—the others are Hindu deities. The inscriptions are in the “Oochien” and “Lencha” characters of Thibet. Uchen and Ranja* of some pronunciations. The slabs are generally from a foot to 2 feet square. This 9 feet upright stone has writing all over its southern side.

From Gayzing I reached the Kullait river. After an hour of steep descent forded the river ; it was 40 feet wide, thence ascended by a horrid road, which is very little used, to Tadong, “which is to the west of and above Rinchinpoong ; crossed the Rungsong, a feeder of the Kullait near Tadong. Ther. at 7 A. M. 40°.

January 3rd.—Started at 7 A. M. ; about a mile above Tadong well, fell into the high road from Rinchinpoong, at a saddle in the Kaluk ridge, where there is a Mendong. From this point the “Zhen lah,” a ridge with 3 remarkable conical peaks, comes in view to the south. The centre peak of the 3 bears S. 20 W. The Kaluk and Zhen lah ridges are separated by the Rishi, which runs easterly to the great Rungeet. On the eastern continuation of the Zhen lah is the Lench Goomba. It bears S. 15 E. An hour and half from Taluk Mendong we crossed the Rishi by sticks laid from one boulder to another, through a very rapid current, into which one of the coolies fell. From this we ascended to a saddle between two of the Zhen lah peaks ; crossed the ridge at the elevation of 3500 feet, I reckon, and at a Mendong. Thence we descended to the Rahto, a feeder of the great Rungeet, and running easterly, and by a tedious ascent in a south direction, we reached a saddle on the ridge of Chakoong, which saddle is 5000 feet, I think, and 6 hours good marching from Tadong. There is a Mendong at the saddle, and some Lepehas’ houses, but water is distant, so we crossed Chakoong and descended about a mile on its southern face to a small stream of water. From Chakoong the head of the little Rungeet bears S. 52 W., and Talom, a very large flat terrace, S. 70 W.

There is iron ore in the Chakoong range, and a mine was at one time worked there, but is now closed, as the Lamas pronounce it an

* Ranja, Sanscrit—and Outza, Tibetan.—B. H. H.

unhallowed work to dig into the bowels of the earth! The large lime deposit which I visited six years ago, is also in the Chakoong range.

Found tree ferns on the Rishi—the first I have seen since I crossed the Rungeet on the way out.

January 4th.—Descended in a S. West direction to the Rumam river, which we crossed to the Kirmi range over bundles of bamboos laid from rock to rock over a furious current. A little lower down there is a suspension bridge for the rains. From the Rumam, the road runs by the river on the Kirmi side for about 2 miles, and is nearly level; then it ascends to the Goke spur, crosses it at a Mendong, and descends to the little Rungeet opposite the Police Chowkey, which is in our territory, and about 10 miles from Darjeeling via the Vah spur, and Tugvor. I arrived at Darjeeling very tired, and just one month from the day I started.

METEOROLOGY.

Sikim, Dec. 1848.

Date.	Hour.	Place.	Shade.	Sun.	W.B.	Wind, &c. &c.
Dec. 4.	5 P. M.	Rungeet Guard house.	68°	..	..	Calm S. clear.
*	6 .. ..	.. ..	68	..	..	Ditto Ditto.
	8 .. ..	.. ..	64	..	..	Ditto Ditto.
	9 .. ..	.. ..	64	..	..	Cloudy.
*	5 6 A. M.	.. ..	58	..	..	Clear. No dew.
	7 .. ..	.. ..	59	..	..	Ditto and Calm.
	8	Cane bridge.	64	..	..	Temp : of river 59°.
	4 P. M.	Selukfoke.	59	..	53	Heavy frost ; calm.
	5 .. ..	.. ..	54	..	50	Slight air North.
	7 .. ..	.. ..	54	..	..	Ditto.
	9 .. ..	.. ..	53	..	..	Calm.
*	6 6 A. M.	.. ..	51	..	..	Light breeze.
	10	Peak of Silukfoke.	70°	..	..	..
	11	Namgialachi.	69	100	62	..
	12 .. ..	.. ..	70	..	64	..
	5 P. M.	.. ..	56	..	..	..
	2 .. ..	.. ..	63	..	..	..
	6 .. ..	.. ..	52	..	..	Moon light ; cloudy.
	7 .. ..	.. ..	52	..	..	Water boils 201½.
*	7 4 A. M.	.. ..	44	..	..	Very heavy dew.
	5 .. ..	.. ..	45	..	..	..
	8	Sundoochhi.	50	..	..	Cloudy.
	10	Lamchook foot of Tendong.	45	..	..	Ditto.
	11	Tendong top.	46	..	..	Ditto.
	4 P. M.	Temi.	50	..	..	Gentle breeze N. E.
	8 .. ..	.. ..	50	..	..	Water boils at 202.
	10 .. ..	.. ..	50	..	..	Calm and clear.
†	8 5 A. M.	.. ..	50	..	..	Very heavy dew.
	11	Rungni River.	66	..	..	Temp : of stream 61°.
	4 P. M.	Namfok.	64	..	..	Water boils 208°.

* In a small Blanket tent without shade.

† Without Black Bulb.

Date.	Hour.	Place.	Shade.	Sun.	W.B.	Wind, &c. &c.
Dec.	8 .. ..	.. ..	60	..	..	.. ..
9	3 P. M.	Teesta, Bangsong.	70	80	..	Water boils at 209°.
	5 .. ..	.. ..	62	..	..	Temp : of river 52°.
	8 .. ..	.. ..	59	..	..	Brilliant night.
10	7 A. M.	.. ..	57	..	..	Temp : of river 53°.
	3 P. M.	.. ..	70	..	6	Calm.
11	2 P. M.	Kedong.	58	..	..	Temp : of stream 54°.
	4 .. ..	.. ..	56	..	..	Calm.
	5 .. ..	.. ..	51	..	..	Water boils 200½.
	9 .. ..	.. ..	56	..	..	Cloudy and drops of rain.
12	6 A. M.	Kedong.	52	..	..	.. ..
	7 .. ..	.. ..	52	..	..	.. ..
	1 P. M.	Tukbrum.	60	..	..	Temp : of streamlet 56°.
	6 .. ..	.. ..	57	..	..	Water boils 204°.
	9 .. ..	.. ..	54	..	..	Very cloudy overhead and to the N.
13	6 A. M.	.. ..	45	..	..	Snowed heavily on the mountains during the night. Bright and clear.
	11	Sungdam.	58	..	..	.. ..
	3 P. M.	Kedong.	59	..	..	Fine bright forenoon.
15	6 P. M.	Teesta, Bangsong.	60	..	..	Rain all day, now pour- ing heavily,
16	1 P. M.	.. ..	62	..	..	Temp : of river 52°. Rain ceased at day light. Ther : 60. Water boils 208¾ths. Fell to 36°. during the night.
25	6 P. M.	Upper Namfok.	45			
10 .. ..	.. ..	43				
27	10 P. M.	Mainomchoo shoulder	36	..	..	Fell during the night to 24°. Two feet of snow on the ground.
28	10 A. M.	Top of Mainomchoo.	38	132	..	Fell to 21° during the night; very hard frost. Temp : of the snow 26°. Water boils at 192½.
	9 P. M.	Yangang.	45			
30	7 A. M.	Lingdam.	40			
	9 P. M.	Suneek.	51			

PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL
FOR MAY, 1849.

The usual monthly meeting of the Asiatic Society was held on Saturday, the 5th May, 1849.

The HON'BLE SIR JAMES COLVILLE, President, in the chair.

The proceedings of the April meeting were read and confirmed, and the accounts and vouchers of the preceding month laid upon the table.

Dr. Macrae, having been proposed at the April meeting, was ballotted for and duly elected.

The following gentlemen were proposed as members:—

Cecil Beadon, Esq., C. S. proposed by Mr. Piddington, seconded by Mr. Laidlay.

Dr. Row, Superintending Surgeon, Dacca, proposed by Lieut. Staples, seconded by Mr. Laidlay.

R. V. Thurnburn, Esq., proposed by Dr. McClelland, seconded by Dr. Walker.

Raja Radhakant Deb intimated his desire to withdraw his name from the list of members.

Read a letter from H. M. Elliot, Esq. Secretary to Government of India, with the Governor General, forwarding for publication Journal of a Trip through the Kohistan of the Jullunder, by Lieut. W. H. Parish. (Ordered for publication in the Journal.)

From A. Shakespear, Esq. Officiating Assistant Secretary to the Government N. W. P., transmitting Capt. Fenwick's Journal of his passage down the Nerbudda from Chikulda to Baroach. As also abstracts of two Journals containing a notice of the most important obstructions to the navigation.

From C. Allen, Esq. Officiating Secretary to Government N. W. P. forwarding a note by Lieut. R. Strachey of the Engineers, on the snow line in the Himalaya, for publication in the Journal, and requests to be furnished with 100 copies of the same.

From W. Seton Karr, Esq., Under-Secretary to Government of Bengal, conveying (in reply to the application of the Council) the orders of Government regarding the authority the Council of the Asiatic Society are to exercise over the Curator of the Museum of Economic Geology and his expenditure. The following reply has been received.

No. 545.

*From the Under-Secretary to the Government of Bengal,
To J. W. LAIDLAY, Esq., Joint Secretary to the Asiatic Society.*

Dated Fort William, the 14th April, 1849.

SIR,—Your letter to the address of the Secretary to the Government of India, in the Home Department, dated February last, having been transferred to this Office, I am directed by the Deputy Governor of Bengal to forward, in reply, a copy of a letter which was addressed to Mr. Piddington on the 21st November 1846, No. 761.

2. His Honor further directs me to beg that the contingent bills of the Museum of Economic Geology may be passed, as heretofore, by the Secretary, who, as being responsible under the Society's Council for the due application of the Government Grant, has the power to disallow any excessive or unreasonable charges contained in those bills. I am also directed to state that every consideration will always be given by the Government to the recommendation of the Council, either for the appointment or for the removal of the Curator.

3. The Society are requested to correspond direct with this Office for the future.

I have the honor to be, Sir,
Your most Obedient Servant,
W. SETON KARR,
Under-Secretary to the Government of Bengal.

No. 761.

*From G. A. BUSHBY, Esq., Secretary to the Government of India,
Home Department,
To H. PIDDINGTON, Esq. Curator Museum Economic Geology.*

Dated the 21st November, 1846.

SIR,—I am directed to acknowledge the receipt of your letter dated the 6th instant, with enclosure, and in reply to state that the Government would

not appoint to the Office of Curator to the Museum of Economic Geology but on the recommendation of the Asiatic Society, and the President in Council would not wish in any way to interfere authoritatively with the appointment in question.

I have, &c.

(Signed) G. A. BUSHBY,

Secretary to the Government of India.

(True Copy.)

W. SETON KARR,

Under-Secretary to the Government of Bengal.

From Professor Holinboe of the Christiania University, announcing the despatch of a collection of objects of Natural History.

From B. H. Hodgson, Esq., forwarding a description of the Polecat of Tibet.

From the same, forwarding a note of the Aborigines of Southern India.

From the same, forwarding a valuable MS. copy of Lalita Vistara, for publication in the *Bibliotheca Indica*.

Ordered, that the thanks of the Society be presented to Mr. Hodgson, and the subject referred to the Oriental Section.

From Dr. Hooker, Botanical notes made during an excursion in Sikkim, presented by the Hon'ble the President.

From J. Christian, Esq., forwarding a Sanscrit inscription on a slab of stone from a temple near Monghir, and its translation.

From Baron Hammer Purgstall, presenting the Vienna Review and Transactions of the Imperial Academy of Sciences.

From Professor Flügel, acknowledging a copy of Abdool Razaq's Dictionary, and requesting to be nominated a member of the Asiatic Society.

From W. Neal, Esq. Collector of Oriental Translation Fund, London, acknowledging the Society's remittance of £ 21 in payment of subscription to the Oriental Translation Fund, for 1847-48.

From Prince Golam Muhammad, presenting donation of books to the Society.

From Captain Hollings, presenting a small collection of coins.

From F. Taylor, Esq. Officiating Secretary of the Local Committee of Public Instructions, Delhi, soliciting a copy of the Journal of the Society for the use of the Delhi College.

Ordered, that the Society regret that they cannot comply with Mr. Taylor's request, in consequence of having refused similar applications.

From Dr. Roer, Secretary to the Oriental Section, the following letter :—

To J. W. LAIDLAY, Esq. Secretary Asiatic Society.

Dated Asiatic Society, the 28th March, 1849.

SIR,—I have the honour to return to you my Report of the 6th ult. and to state for the information of the Council and the Society, that the Oriental Section have agreed to the proposals therein submitted, with the exception of the first, concerning the MSS. to be lent to Dr. Müller, which they beg to refer to the decision of a General Meeting of the Society.

2. With regard to the third proposal, it is the view of the Section, that Mr. Koenig's request should be complied with on the condition, that he pays for the copies. No opinion, however, has been offered on the Oriental works which I proposed for exchange, and which ought to be in our Library, and I therefore beg leave to recommend the purchase of them by the Society.

I have the honour to be, Sir,

Your most Obedient Servant,

E. ROER,

Co-Secretary Asiatic Society, Oriental Department.

To DR. W. B. O'SHAUGHNESSY, Senior Secretary, Asiatic Society, Bengal.

Dated Asiatic Society, the 5th February, 1848.

SIR,—I have the honour to submit to you, for the consideration of the Council and the Asiatic Society, a report on the following subjects :—

1. Dr. Müller, the editor of the *Sanhitá* of the *Rig Veda*, has repeatedly expressed to me his anxious desire to obtain some more MSS. for the second Ashtaka of the *Rig Veda*, if possible the MS. of a private Library, as those of public Libraries are almost all copies of the same original. I have not succeeded in procuring a MS. of this kind, but it occurs to me, that the Society is able to assist Dr. Muller in his undertaking by granting him the loan of the *Rig Veda Sanhitá* with commentary, in its Library, and also of the parts of the *Rig Veda* that have been copied at Benares for the Society. The MS. of the Society, unless compared with other MSS., is quite worthless, as it is *very incorrect and defective*. Yet it has been of great use to me, since it contains sometimes passages which are not met with in any other MS., and I therefore believe it would be a valuable assistance also to Dr. Müller. Although it is not usual to lend the MSS. of our Library to gentlemen not residing in Calcutta, I think the Society should make an exception on an occasion as the present; for beside, that every learned

Society should afford all assistance in its power to further an undertaking of this kind, Dr. Müller's publicieation is made under the auspices of the Court of Directors.

2. Dr. Weber from Berlin, has sent a specimen of his edition of the Vajasaneyi Sanhitá, or the Sanhitá of the White Yajur Veda, for the inspection of the Society. The first parts of the first and second volumes (each of 160 pages) will probably appear in March, at Co.'s Rs. 10. The whole work is to contain : 1. *Vajasaneya Sanhitá*, with the commentary of Mádhava. 2. *Sata Patha Bráhmaṇa*, with extracts from the commentaries of Mádhava, Parswami and Dwiveda Ganga. 3. *Katyáyana Sranta Sútra*, with extracts from the commentaries of Yajnaka Deva,—all three works accompanied with complete indexes. The whole is calculated for 7 Rs., of about 320 pages each.

The author requests the patronage of the Asiatic Society for his undertaking, and as its success partly depends on the number of subscribers, I would propose that the Society subscribe for twenty copies, to be paid from the Oriental Fund.

3. In a letter received by the last overland mail, Mr. Koenig repeats a request, made by him already sometime ago, that the Society be pleased to despatch to him regularly every month, through Messrs. Allan & Co. 25 copies of the Asiatic Journal, either on payment or in return of books printed in Germany, or in countries connected with it. As there are a great number of Oriental works printed in Germany that are not in our Library, I would suggest that Mr. Koenig's proposal be accepted by the Society. I annex a list of some of the works, alluded to. (No. 1.)

4. With a view to procure a more extensive circulation for the *Bibliotheca Indica* and to make the best use of the works, patronised by the Society, I beg to recommend :—

1. That a copy of the *Bibliotheca Indica* and of Dr. Hæberlin's Sanscrit Anthology, be presented to such Societies and scholars as have favoured the Society with their publications. I forward, for the approval of the Society, a list of parties entitled to this mark of attention on the part of the Society. (No. 2.)

2. That the Members of the Oriental Section should also receive a copy of the Oriental Journal.

3. That a copy of Mr. Hodgson's work, "On the Aborigines of India, and of Mr. Laidlay's translation of Fa Hian from the French, be given to such Members of the Society as may apply for them.

I have the honour to be, Sir,

Your most Obedient Servant,

E. ROER,

Co-Secretary Asiatic Society, Oriental Department.

No. 1.

1. Kritische Grammatik der Sanskrit Spraeche in kürzerer Fassung, von Fr. Bopp. Zweite Ausgabe, Berlin, Nieolai, 1845.
2. Kortfattet Sanskrit Formloere of N. L. Westergaard. Kjöbenhavn, 1846.
3. Über einige ältere Sanskrit Metra, von G. A. Ewald, Göttingen, 1827.
4. Sanskrit Clrestomathie, von O. Böthlingk, St. Petersburg, 1845.
5. Sanskrit Læsebog of N. L. Westergaard. Kjöbenhavn, 1846.
6. Indische Gedichte in deutschen Nachbildungungen, von A. Hoefer. Leipzig, 1844, 2 Vols.
7. Brihadáranyaka, &c., herausgegeben von L. Poley. Bonn, 1844.
8. Bruehstücke aus Walmiki's Rámáyana, übersetzt von A. Holtzmaun. Karlsruhe, 1841.
9. Ráma, ein indisches Gedicht nach Walmiki, von A. Holtzmann. Karlsruhe, 1843.
10. Ueber die Sprache und Weisheit der Indier, von Fr. Schlegel. Heidelberg, 1808.
11. Nala. Aus dem Sanskrit übersetzt, von J. G. Kosegarten, Jena, 1816.
12. Nal und Damajanti, von F. Rückert. Frankfurt, 1828.
Zweite verbesserte Auflage, 1838.
Dritte Auflage, 1845.
13. Bhagavad Gita, ed. A. Schlegel. Second Edition. Bonn, 1846.
14. Brahma-Vaivarta Purána, Specimen. Ed. A. F. Stenzler. Berol. 1829.
15. Devimahátmyam, Márkandeyi Puráni sectio. Ed. L. Poley. Berol. 1844.
16. De nonnullis Padua-Puráni capitibus. Ed. A. E. Wallheim. Berol. 1831.
17. Fünf Gesänge der Bhatti-Kavya, Aus dem Sanscrit von C. Schütz. Bielefeld, 1837.
18. Bháravi's Kirátárjuniyam. Aus dem Sauskrit von C. Schütz. Bielefeld, 1845.
19. Mághas, der Sisupála, übersetzt von C. Schütz. Bielefeld, 1837.
20. Bhartriharís Sententiae. Ed. P. a Bohlen. Berol. 1833.
21. Ghatakarpura, ed. G. M. Durseh. Berlin, 1828.
22. Mahamudgara, Sanserite et Germ. Ed. H. Brockhaus, 1841.
23. Urwasi, der Preis der Tapferkeit, übersetzt von K. G. A. Hoefer. Berlin, 1837.
24. Probodha Chandrodaya. Krishna Misri Comœdia. Ed. H. Brockhaus. Leipzig, 1845.
25. Probodha Chandrodaya. Koenigsberg, 1842.

26. Hitopadcsa, übersetzt von M. Müller. Leipzig, 1844.
27. T. H. Windischmanni Sancara, sive de theologumenis Vedanticorum. Bonn, 1833.
28. Alt-Indische Geburtshülfe, von J. A. Vullers. Giessen, 1846.
29. Das alte Indien, von P. v. Bohlen.
30. Bernfeyr Altindische Literatur (?).
31. Boller's Sanskrit Grammatik.

To these works I add a list of some other Sanskrit publications, not in our Library.

1. Dasakumáracharitra, by H. H. Wilson. London, 1846.
2. Vedánta Soutras, par L. Poley. Paris.
3. Elements of the Sanscrit language, by W. Price. London, 1823.
4. Grammaire Sanscrit-Française, par M. Desgranges. Tome 1. Paris, 1845.
5. Grammar of the Sanscrit Language, by Williams. London, 1846.
6. Monuments littéraires de l'Inde, par A. Langlois. Paris, 1826, 1 Vol.
7. Etudes sur les hymnes du Rig-Veda par F. Neve. Louvain, 1842.
8. Upanischats, par L. Poley, (Livr. 1—6). Paris, 1 Vol.
9. Káthaka Upanischat, traduit par L. Poley. Paris, 1835-4.
10. Mundaka Upanischat, traduit par L. Poley. Paris, 1836.
11. Kena et Isa Upanishad, Sanscrite, Gallice et Persice, ed. G. Panthier, 1837.
12. Rámáyana, poemo Indiana di Valmicis, per G. Gorresio, 3 Vols. 1843—1845.
13. Fragments du Mahábhárata, traduits en Français, par Th. Panie, Paris, 1844.
14. Le Bhágavata Purana, traduit, publié par E. Burnouf, 2 Vols. Paris, 1840—1844.

No. 2.

1. Royal Asiatic Society of London.
2. University of Oxford.
3. ————— Cambridge.
4. ————— Dublin.
5. ————— Christiania.
6. Asiatic Society at Paris.
7. Deutsche Morgenländische Gesellschaft.
8. Royal Academy at Berlin.
9. ————— Munich.
10. ————— St. Petersburg.

11. Branch Royal Asiatic Society in Bombay.
12. Literary Society at Madras.
13. College of Fort William.
14. Sanscrit College at Calcutta.
15. _____ Benares.
16. Bishop's College.
17. Tattwa Bodhini Sabhha.
18. Honourable J. Thomason.
19. Mr. J. Muir.
20. Raja Radhakant Deb.
21. Professor H. H. Wilson.
22. Professor E. Burnouf.
23. Professor J. Mohl.
24. Major Troyer.
25. Mr. Panthier.
26. Dr. M. Muller.
27. Baron Hammer-Purgstall.
28. Professor Chr. Lassen.
29. Mr. F. Rückert.
30. Dr. Weber.
31. Professor Böthlinck.
32. Professor Fr. Bopp.
33. Dr. J. Mill.

RESOLVED, That the Society adopt those suggestions contained in this letter which are approved of by the Oriental Section, but with reference to the transmission to England of the MS. of the Rig Veda now in the Society's Library, it is contrary to the established rules of the Society, and cannot be sanctioned—Dr. Roer however is authorized to communicate with Dr. Müller, and should that gentleman require a copy of the MS. in question, to offer to prepare a copy at his expense.

Read extract of a letter from Mr. Hodgson, offering to send down a valuable collection of drawings illustrating the Antiquities and Architecture of Nepal, should it be the Society's intention to carry out the work proposed some months ago on the Archaeology of India.

The Secretary submitted to the Society for purchase a copy of the Tarikh-i-Abu Sazad, for 33 rupces. Referred to the Oriental Section.

JAMES WM. COLVILLE, *President.*

II. WALKER, *Officiating Secretary.*

LIBRARY.

The following books have been received since the last meeting:—

Presented.

A sketch of the war with Tippu Sultan. By Lieut. R. Mackenzie, 2 Vols.—

PRESENTED BY PRINCE GOLAM MUHAMMAD.

Asiatic Annual Register, Vol. XI.—**BY THE SAME.**

A view of the Origin and Conduct of the war with Tippu Sultan. By Lieut.-Col. A. Beatson.—**BY THE SAME.**

A narrative of the Campaign in India which terminated the war with Tippu Sultan. By Major Dirom. London, 1793. 4to.—**BY THE SAME.**

An account of the war in India between the English and French on the coast of Coromandel, from the year 1750 to the year 1760. By R. O. Cambridge, Esq. London, 1761. 4to.—**BY THE SAME.**

British India Analysed. London, 1795, 3 Vols. 8vo.—**BY THE SAME.**

Salmond's Review of the Origin, Progress and Result of the decisive war with the late Tippu Sultan. London 1800. 8vo.—**BY THE SAME.**

The captivity, sufferings and escape of James Scurry, who was detained a prisoner during ten years in the dominions of Hyder Ali and Tippu Saheb. London, demi 8vo.—**BY THE SAME.**

Authentic Memoirs of Tippo Sultan, by an officer in the East India Service. Calcutta, 1820.—**BY THE SAME.**

An Historical Sketch of the Princes of India. Edinburgh, 1833. 8vo. **BY THE SAME.**

Journal of the American Oriental Society, Nos. I. II.—**BY THE SOCIETY.**
Jahrbücher der Literature for 1847. **BY THE BARON VON HAMMER PURGSTALL.**

The Prem Ságar: translated into English. By Capt. W. Hollings. Calcutta, 1848.—**BY THE TRANSLATOR.**

The Bytal Pucheesee, translated into English. By Capt. W. Hollings. Calcutta, 1848.—**BY THE SAME.**

Annales des Sciences Physiques et Naturelles d'Agriculture et d'Industrie, publiées par la Société Royale d'Agriculture, etc. de Lyon. Tome X.—**BY THE SOCIETY.**

Bulletin de la Société de Géographie. Tome VIII.—**BY THE SOCIETY.**

Annales de la Société Linnéenne de Lyou. Années 1845-6.—**BY THE SOCIETY.**

Zeitschrift der Deutschen morgenländischen Gesellschaft, herausgegeben von den Geschäftsführern. Erster Band, Heft I.—IV. Zweiter Band, I.—III. Heft.—**BY THE EDITORS.**

Jahresbericht der Deutschen morgenländischen Gesellschaft, für 1845-6.—**BY THE EDITOR.**

Report of the Calcutta Public Library, for 1848-9.—**BY THE CALCUTTA PUBLIC LIBRARY.**

Journal of the Agricultural and Horticultural Society of India. Vol. VI. Part IV.—**BY THE SOCIETY.**

Journal of the Indian Archipelago. Vol. III. No. 3.—**BY THE MADRAS LITERARY SOCIETY.**

Madras Journal of Literature and Science, Vol. XV.—**BY THE SAME.**

The Oriental Baptist, No. 29.—**BY THE EDITOR.**

The Calcutta Christian Observer for May 1849.—**BY THE EDITORS.**

Upadeshaka, No. 29.—**BY THE EDITOR.**

The Oriental Christian Spectator, Vol. X. No. 3.—**BY THE EDITOR.**

Tattwabodhiní Patricá. No. 69.—**BY THE TATTWABODHINI SABHA.**

Rede des Präsidenten der Kaiserlichen Akademie der Wissenschaften, Freiherrn von Hammer-Purgstall.—**BY THE BARON VON HAMMER PURGSTALL.**

Archiv für die Kunde Oesterreichischer Geschichtsquellen.—**BY THE SAME.**

Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Erstes Heft.—**BY THE SAME.**

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the month of February, 1849.—**BY THE DEPUTY SURVEYOR GENERAL.**

Dr. Morten ucceb Katekismusas. Kristianast, 1837, 12mo.—**BY THE ROYAL UNIVERSITY OF CHRISTIANIA.**

Bibel-Historia mailme sivnedume rejast Moses jubnrem ragjai bibel jecas sanguim muittaluvoum ; ja 22 David psalmak. N. W. Stokflethast. Kristianast, 1840, 8vo.—**BY THE SAME.**

Ucceb asaturvum Altar Gisjas. Kristianast, 1840. 8vo.—**BY THE SAME.**

Rokkus-ja Oappo Girje, Samas Jarggaluoorm N. V. Stokflethast. Kristianast, 1840. 8vo.—**BY THE SAME.**

Abes ja Lakkam Girje. Kristianast, 1837. 8vo.—**BY THE SAME.**

Den Ældve Edda. Samling af Norrone Oldkuad in Seboldende Nordens Ældite Guge-og Helte-Sagu, udginet af P. A. Munch. Christiania 1847, 8vo.—**BY THE SAME.**

Fagrskinna. Udginet af P. A. Munch og : C. R. Unger. Christiania, 1847.—**BY THE SAME.**

Norsk Flora. Af M. R. Blytt. Forste bestte. Christiania, 1847, 8vo.—**BY THE SAME.**

Nyt Magazin for Naturvidenskra berne. Femte Binds. Christiana, 1846-8.—**BY THE SAME.**

Konge-Speilet et Philosophisk-didaktisk skrift for fatted i norge mod slutningen af det tolste Aarhundrede. Christiania, 1848, 8vo.—**BY THE SAME.**

Hærramek ja bæ ustamek Jesus Kristus Adda Testament. Christiania, 1840, 8vo.—**BY THE SAME.**

Norske Universi tets og Skole Annales, 3 vdi befte. Christiania, 1847. Pamphlet.—**BY THE SAME.**

Enumeratio Plantarum Vascularium, quæ circa Christianiam sponte nas- cuntur, Auctore M. R. Blytt.—**BY THE SAME.**

Grammatik i de Lappiske Sprog, af N. V. Stockfletch. Christiania, 1840.—**BY THE SAME.**

Catalogue of books received into the Royal University of Christiania, during the year 1847.—**BY THE SAME.**

Sanskrit og Aldnorsk, en Spoogsammenlignende Afhandling af E. A. Holmboe. Christiania, 1846, 4to. Pamphlet.—**BY THE SAME.**

Det Aldnorske Verbum, oplyat vid Sammenligning med Sanskrit og andre spoog af Summe Act. Af C. A. Holmboe, Christiania, 1848, 4to. Pamphlet.—**BY THE SAME.**

Norges Gamle Loue indtil 1387. Christiania, 1848. 2 Vols. demi folio.—**BY THE SAME.**

Fauna littoralis Norvegiae, von M. Sars. Erstes Heft.

Exchanged.

Athenæum, Nos. 1112—14.

Philosophical Magazinie, Nos. 222—3.

Purchased.

Comptes Rendus, Nos. 25—6.

Edinburgh Review, No. 180.

Calcutta Review, No. 21.

North British Review, No. 20.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of May, 1849.

Lat. $22^{\circ} 33' 28''$, Lon. $88^{\circ} 23' 42''$ E., Mag. Variation $2^{\circ} 28' 36''$ E., Mag. Dip. $27^{\circ} 45'$.

Days of the Month.	Observations made at sunrise.				Maximum Pressure observed at 9h. 30m.				Observations made at apparent noon.				Observations made at 2h. 40m.				Minimum Pressure observed at 4 p. m.				Observations made at sunset.				Maximum and Minimum Thermometer.												
	Temperature.		Wind.		Barometer reduced to 32° Fahrenheit.		Temperature.		Wind.		Barometer reduced to 32° Fahrenheit.		Temperature.		Wind.		Barometer reduced to 32° Fahrenheit.		Temperature.		Wind.		Barometer reduced to 32° Fahrenheit.		Temperature.		Wind.		Elevations.								
		Inches.	Feet.	Wind.	Direction at sunrise.		Inches.	Feet.	Wind.	Direction at sunrise.		Inches.	Feet.	Wind.	Direction at noon.		Inches.	Feet.	Wind.	Direction at 4 p. m.		Inches.	Feet.	Wind.	Direction at sunset.		Maximum.	Mean.	Minimum.	Maximum thermometer in sun's rays.	Mean thermometer.	Wind Gauges.					
1	100	29.776	80.1	81.8	19.1	S. W.	Cumul.	79.721	92.1	93.9	81.1	S.	Clear,	29.684	100.0	99.9	78.8	S. W.	Clear,	29.580	98.1	96.8	78.3	S.	Clear,	29.491	91.4	90.9	82.9	S.	Cirro cumul.	101.0	92.0	81.1	116.2	..	1
2	100	29.770	80.8	81.9	18.8	S.	Clear,	79.725	92.8	93.1	83.6	S.	Ditto	29.689	103.8	103.0	82.9	S. S. W.	Ditto	29.584	102.8	100.7	81.9	S.	Ditto	29.492	93.9	92.8	82.1	S.	Char.	103.1	93.6	81.1	123.9	..	2
3	100	29.774	81.6	82.2	19.7	S.	Ditto	79.729	93.2	92.9	83.3	S.	Ditto	29.693	103.2	101.3	80.8	S.	Cumulo strati.	29.589	100.8	98.8	80.2	N. W.	Cloudy,	29.498	93.8	93.1	82.3	119.0	..	3					
4	100	29.778	82.5	83.4	18.0	S. E.	Cloudy,	79.733	92.4	91.9	81.8	S. W.	Cumulo strati.	29.697	93.0	96.1	82.1	S. E.	Cumulo strati.	29.593	100.2	98.0	81.2	N. N. E.	Cumulo strati.	29.501	92.8	91.4	82.3	118.7	0.28	4					
5	100	29.781	83.7	84.2	16.0	N. W.	Cirro cumul.	79.737	93.7	93.9	80.1	N. N. W.	Cirro cumul.	29.701	94.0	92.1	81.7	W. S. W.	Cirro cumul.	29.602	93.7	93.3	81.9	S.	Cloudy,	29.511	92.0	81.6	81.1	116.2	..	5					
6	100	29.785	83.7	84.3	15.9	S.	Cumulo strati.	79.741	92.0	91.9	81.3	S. S. W.	Cumulo strati.	29.705	91.0	96.0	80.5	S. S. E.	Clear,	29.606	100.8	98.9	80.7	S.	Cloudy,	29.515	92.3	91.8	82.3	119.0	..	6					
7	100	29.789	84.1	84.7	15.9	S. E.	Cloudy,	79.745	92.1	92.1	80.4	S. S. E.	Cumulo strati.	29.713	91.2	93.2	81.3	S. W.	Cumulo strati.	29.612	92.2	91.8	75.2	S. S. W.	Cumul.	29.520	92.8	92.1	82.3	119.0	..	7					
8	100	29.792	84.9	85.8	15.8	S. S. E.	Cirro cumul.	79.750	92.8	93.3	80.8	S. W.	Ditto	29.718	93.3	91.9	81.9	S.	Ditto	29.616	93.0	92.4	79.1	S. E.	Nimbu,	29.524	92.1	91.6	82.3	118.7	0.16	8					
9	100	29.793	84.9	85.8	15.8	S.	Ditto	79.754	93.7	93.4	80.1	N. N. W.	Cirro cumul.	29.722	94.0	93.7	80.9	S. S. E.	Ditto	29.621	92.3	86.3	86.1	S.	Cloudy,	29.531	91.0	81.9	77.0	115.0	..	9					
10	100	29.798	85.8	86.3	15.8	S. S. E.	Clear,	79.758	93.2	93.8	81.5	S. L.	Ditto	29.726	94.8	92.0	80.0	S. E.	Ditto	29.625	92.8	91.7	75.1	S.	Cloudy,	29.535	91.1	80.5	79.0	119.0	..	10					
11	100	29.799	86.9	87.3	15.8	E.	Cloudy,	79.762	94.0	93.7	80.3	N. E.	Ditto	29.730	94.8	91.2	80.9	S. E.	Cumulo strati.	29.630	92.7	86.8	80.0	S.	Cloudy,	29.543	91.3	85.9	77.1	112.2	..	11					
12	100	29.809	87.1	88.8	15.8	N. E.	Ditto	79.766	94.3	93.7	80.7	N. N. E.	Ditto	29.734	94.8	91.1	81.7	N. E.	Cloudy,	29.634	92.7	85.7	76.4	N. N. E.	Cirro strati.	29.553	91.3	83.7	78.0	101.2	..	12					
13	100	29.810	87.3	88.6	15.8	N. W.	Cirro strati.	79.770	94.0	93.6	80.0	W. S. W.	Cumulo strati.	29.738	94.6	92.0	80.0	S. W. W.	Cumulo strati.	29.640	93.3	93.9	74.2	S.	Cloudy,	29.561	91.1	81.6	81.1	121.4	..	13					
14	100	29.819	88.2	88.8	15.8	S. S. W.	Cumul.	79.774	94.3	93.0	83.1	S. W.	Ditto	29.741	95.2	97.3	83.8	S.	Cumulo strati.	29.645	92.0	86.0	80.0	E. S. E.	Scattered clouds.	29.568	91.8	81.5	81.1	131.1	1.90	14					
15	100	29.823	88.5	89.2	15.8	S. S. E.	Cloudy,	79.778	94.3	93.6	83.2	S.	Ditto	29.745	94.8	93.9	83.3	S. sharp.	Ditto	29.648	93.8	92.3	83.0	S.	Cloudy,	29.571	91.4	84.5	81.5	105.0	..	15					
16	100	29.833	88.8	89.3	15.8	S. S. W.	Ditto	79.782	94.3	93.6	81.5	S. W. sh.	Cumulo strati.	29.750	94.6	91.0	83.2	S. W. sh.	Ditto	29.652	94.4	94.4	83.3	S.	Cumulo strati.	29.579	90.7	85.0	86.8	106.8	..	16					
17	100	29.836	88.8	89.5	15.8	E.	Cloudy,	79.786	94.6	93.5	81.3	S. W.	Ditto	29.754	94.8	92.9	83.3	S. W.	Cumulo strati.	29.656	94.2	91.7	79.8	E. S. E.	Rainy,	29.586	91.0	81.8	81.5	113.1	1.90	17					
18	100	29.836	88.8	89.5	15.8	E.	Cloudy,	79.790	94.6	93.5	81.3	S. W.	Ditto	29.758	94.8	92.9	83.3	S. W.	Cumulo strati.	29.661	94.8	92.3	82.2	N. E.	Cloudy,	29.591	91.0	81.8	81.5	113.1	1.90	18					
19	100	29.838	88.8	89.0	15.8	E.	Ditto	79.794	94.6	93.5	81.3	S. W.	Ditto	29.762	94.8	92.9	83.3	S. sharp.	Ditto	29.665	94.8	92.3	82.2	S.	Cumulo strati.	29.594	91.0	81.8	81.5	113.0	..	19					
20	100	29.842	87.2	88.3	15.8	N.	Ditto	79.798	94.6	93.5	81.3	S. W.	Ditto	29.766	94.8	92.9	83.3	S. sharp.	Ditto	29.669	94.2	91.7	82.0	S.	Cloudy,	29.598	91.8	81.5	81.2	112.8	..	20					
21	100	29.851	88.7	89.5	15.8	N. W.	Cirro cumuli.	79.802	94.0	94.4	83.4	S. E.	Cumul.	29.770	95.3	93.2	82.8	S. E.	Cumulo strati.	29.672	96.1	94.0	82.0	S. S. E.	Clear,	29.781	92.9	91.7	79.8	112.0	..	21					
22	100	29.856	88.2	89.2	15.8	S. L.	Ditto	79.806	94.3	94.9	83.3	S. S. E.	Cumulo strati.	29.774	95.6	94.7	83.7	S. S. E.	Ditto	29.675	96.1	93.2	82.2	S.	Cirro cumul.	29.782	92.6	91.0	80.8	112.8	..	22					
23	100	29.853	88.9	89.3	15.8	S. E.	Clear,	79.810	94.8	92.3	83.1	S.	Ditto	29.778	95.7	96.1	83.1	S. W.	Cumul.	29.679	96.9	91.3	81.7	S. S. E.	Cumulo strati.	29.787	92.5	90.5	90.2	111.0	..	23					
24	100	29.853	88.9	89.2	15.8	S.	Cloudy,	79.814	94.8	92.3	83.1	S.	Ditto	29.782	95.7	96.1	83.1	S. sharp.	Ditto	29.683	97.7	96.7	83.1	S.	Cloudy,	29.796	91.0	82.4	82.4	111.0	..	24					
25	100	29.851	88.1	89.0	15.8	S. S. W.	Cirro cumul.	79.817	93.3	92.4	84.3	S.	Clear,	29.786	94.3	91.8	85.3	S. S. W.	Cumul.	29.686	97.7	96.2	85.3	S.	Cloudy,	29.803	91.9	91.0	85.0	109.0	0.64	25					
26	100	29.858	88.1	89.0	15.8	S. S. W.	Cloudy,	79.821	91.9	91.3	81.0	S.	Cumul.	29.790	94.6	93.3	85.3	S.	Ditto	29.689	97.9	96.0	85.0	S.	Cloudy,	29.816	91.6	90.5	85.6	106.2	1.02	26					
27	100	29.861	88.8	89.3	15.8	S.	Ditto	79.825	94.3	92.0	81.0	S. S. W.	Cirro cumul.	29.794	94.9	91.4	80.3	S. sharp.	Ditto	29.691	97.5	96.5	85.3	S.	Cloudy,	29.821	91.3	90.3	85.3	106.3	..	27					
28	100	29.864	88.9	89.0	15.8	S.	Ditto	79.829	94.9	92.0	81.0	S. S. W.	Cirro cumul.	29.798	94.9	91.4	80.3	S. sharp.	Ditto	29.695	97.5	96.5	85.3	S.	Cloudy,	29.828	91.0	90.3	85.3	106.3	..	28					
29	100	29.861	88.9	89.0	15.8	S.	Clear,	79.833	94.3	92.0	81.2	S. sharp.	Cumul.	29.799	94.3	93.0	80.9	S. S. W.	Cumul.	29.698	97.3	96.2	85.3	S.	Cloudy,	29.838	91.9	91.0	85.8	102.8	..	29					
30	100	29.865	88.1	89.0	15.7	S. S. W.	Cloudy,	79.837	94.6	92.5	80.2	S. sharp.	Ditto	29.803	94.6	93.3	80.3	S.	Clear,	29.701	97.1	96.2	85.3	S.	Cloudy,	29.843	91.3	90.3	85.8	106.3	..	30					
31	100	29.869	88.1	89.0	15.7	S. S.	Scattered clouds.	79.841	94.3	92.7	81.4	S. S. E.	Cumulo strati.	29.807	94.7	91.2	81.4	S.	Scattered clouds.	29.705	97.1	93.7	85.7	S.	Cloudy,	29.853	91.7	90.3	85.8	111.0	..	31					

These Observations have been made for the most part, with a supply of one and five-tenths feet of water. Instruments received into the Observatory, by orders of the Bengal Government, a brief description of the Instruments seems necessary.
Barometer.—The Barometer is a standard Instrument by Neumayr, diameter of the tube 0.501 inches. The following is the comparative showing of this Instrument and those Barometers which were in use at the Observatory prior to 1st of June.

2nd.—The Thermometer is a Standard Instrument by Newman, on metal Scale and graduated to $\frac{1}{2}$ of degree.
3rd.—With bulb Hygrometer by Newman, graduated to single degree divisions, the difference between Standard Thermometer and dry Thermometer of this Instrument is + 0.2, the Temperature of the dry Bulb is taken from the Standard Thermometer, and in the event of the quantity, moisture, dew point, or dryness, being required, it is necessary the difference adverted to, be taken into account.

Maximum and Minimum Thermometer by Newmam. The difference between the Standard Thermometer and any thermometer of this class is .01 to .02.

Lowest Monthly Average of Mean Tides in the Months of February and March, above the Zero of Gauge at Kyd's Dock Yard, Calcutta.	Feet.
Difference of Level between the Zero of Tide Gauge at Kyd's Dock Yard, and the Standard Barometer at the Observatory.	5.53

Height of Standard Bureometer above the Level of the Sun 18.21

of Standard Bureometer above the Level of the Sea,..... 1821

H. L. THUILLIER, CAPTAIN,
Officiating Deputy Surveyor General,
In charge Surveyor General's Office.

